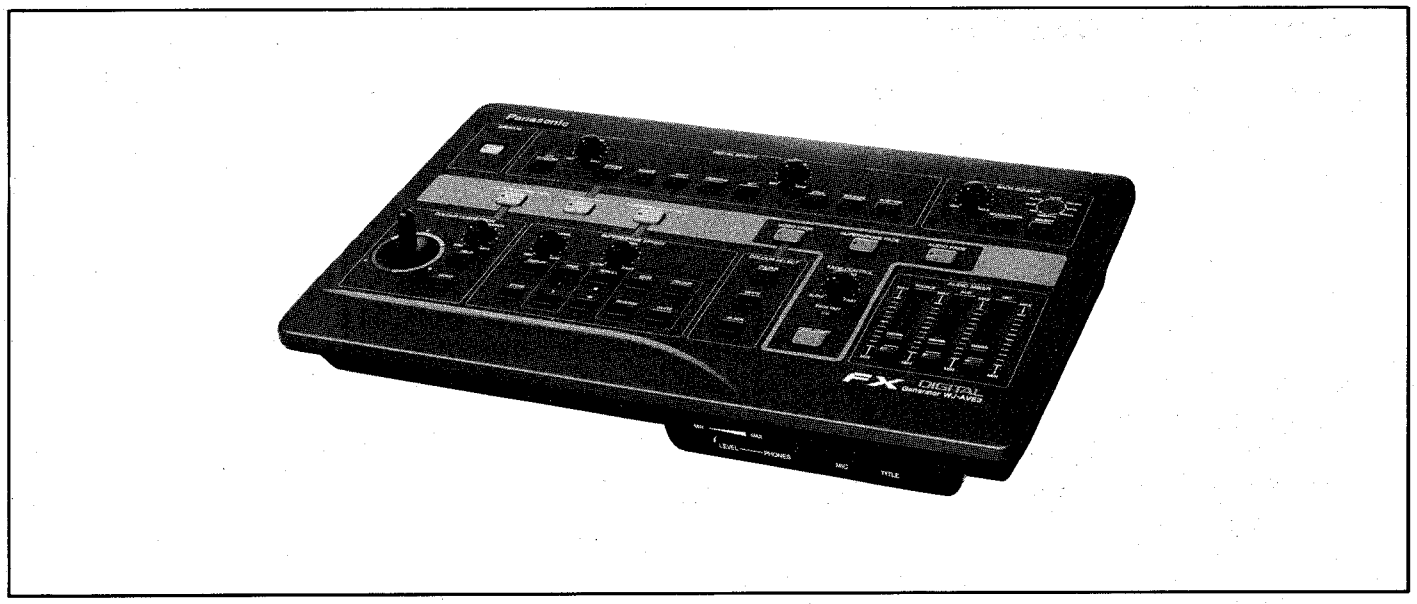
Service Manual

Digital FX Generator

WJ-AVE3



SPECIFICATIONS

Source Input :	× 1
Video Input :	1.0 Vp-p/75 ohms PAL composite signal, BNC connector
Y/C Input :	Y signal : 1Vp-p, C signal : 0.3 Vp-p, 75 ohms, Mini DIN 4 pin connector
Audio Input :	−10 dBV/47 kohms, pin jack (Left and Right)
Superimpose Input :	× 1
Video Input :	1.0 Vp-p/75 ohms PAL composite signal, BNC connector
Y/C Input :	Y signal : 1Vp-p, C signal : 0.3 Vp-p, 75 ohms, Mini DIN 4 pin connector
External Sound Input	
Mic Input (mono) :	−60 dB/600 ohms, unbalanced, pin jack × 1
AUX Input :	−10 dBV/47 kohms, pin jacks (Left and Right)
Character (TITLE) Input :	10 pin connector × 1 for optional Character Generator WJ-TTL5
Recording Output :	× 1
Video Output :	1.0 Vp-p/75 ohms PAL composite signal, BNC connector
Y/C Output :	Y signal : 1Vp-p, C signal : 0.3 Vp-p, 75 ohms, Mini DIN 4 pin connector
Audio Output :	0.5 dBV at fader maximum, pin jack (Left and Right)
Headphone Output :	−80 dBV −0 dBV (8 ohms to 100 ohms), pin jack
Effects	
Video :	Still, Strobe, Mosaic, Paint, Art, Negative, Fade-in/out, Superimpose, Squeeze, Position, A/V Synchro
Audio :	Mix, Fade
Back Colours :	White, Yellow, Cyan, Green, Magenta, Red, Blue, Black
Others :	Graduation, Colour Correction
Gain :	Unity (Video)
Signal-to-noise Ratio :	Video : 46 dB (Composite), 46 dB (Y/C) Audio : 60 dB
Power Source :	220V AC - 240V AC, 50 Hz : WJ-AVE3/A, WJ-AVE3/B, WJ-AVE3/C, WJ-AVE3/G
Power Consumption :	8 W

Panasonic

Ambient Temperature :	0° - 40°C
Ambient Humidity :	Less than 90%
Dimensions :	460 (W) × 71 (H) × 280 (D) mm
Weight :	2.2 kg

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

OPTIONAL ACCESSORY

Character Generator WJ-TTL5

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Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used

EXAMPLE:

A1 ⟶ $10 \times 10^1 = 100$ pF

N2 ⟶ $33 \times 10^2 = 3300$ pF

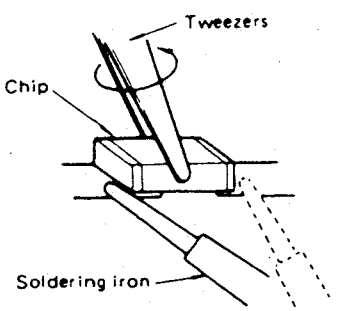
S3 ⟶ $47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal
4. Do not rub the electrode of chips
5. Do not subject the chips to excessive stress
6. It is recommended that a pencil-type soldering iron to be used
7. The solder whose diameter is less than 0.5 mm is recommended
8. Do not heat the chip beyond 3 seconds
9. Maintain temperature control under 260°C (500°F) when soldering

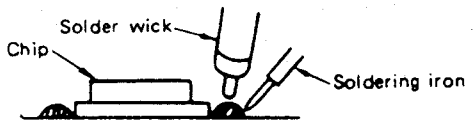
5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers
   Note: Be careful not to damage other chips

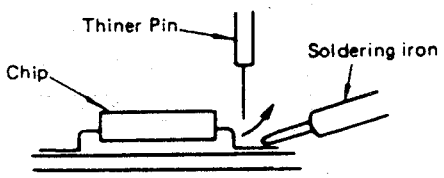


5-2 Removal (IC)

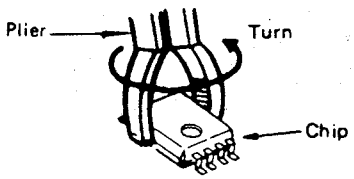
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.

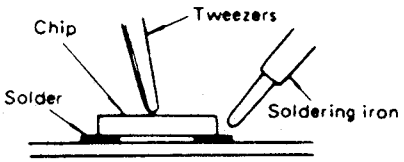


3. Remove IC turning it with plier.

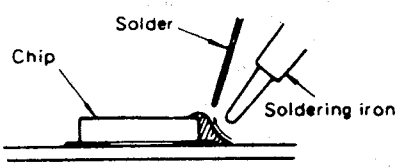


5-3 Mounting

1. Place the solder thinly on the chip mounting foil
2. Solder the chip temporarily while holding the chip with the tweezers



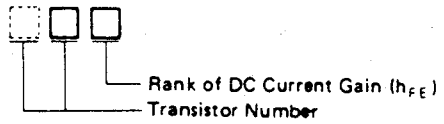
3. Solder both ends of chip (three leads for chip transistor)



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.



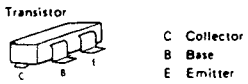
Transistor Number

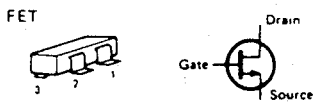
Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1Z	2SD1030
E	2SA1022	1N	2SK199
F	2SA1034	1O	2SK198
H	2SA1035	1A	2SB799
I	2SB792	1B	2SB814
K	2SC2778	1C	2SB902
P	2SD814	1F	2SK321
Q	2SD813	1L	2SK247
R	2SC2480	1K	2SK316
S	2SC2405	1M	2SJ84
T	2SC2406	1T	2SC3077
U	2SC2404	1X	2SC2845
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116

Example

WQ ⟶ 2SD602 – Q
YQ ⟶ 2SD601 – Q
1BS ⟶ 2SB814 – S

Appearance and Symbols

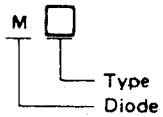




	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

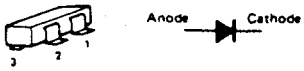
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.



Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK

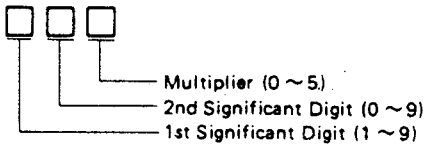
Appearance and Symbols



	1	2	3
MA28/28W/28T	–	Anode	Cathode
MA151K/152K	–	Anode	Cathode
MA151A/152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



EXAMPLE:

330 ⟶ 33×10^0 = 33 ohms
561 ⟶ 56×10^1 = 560 ohms
123 ⟶ 12×10^3 = 12 kohms

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

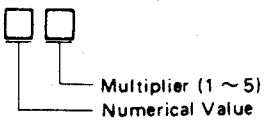
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

EXAMPLE:

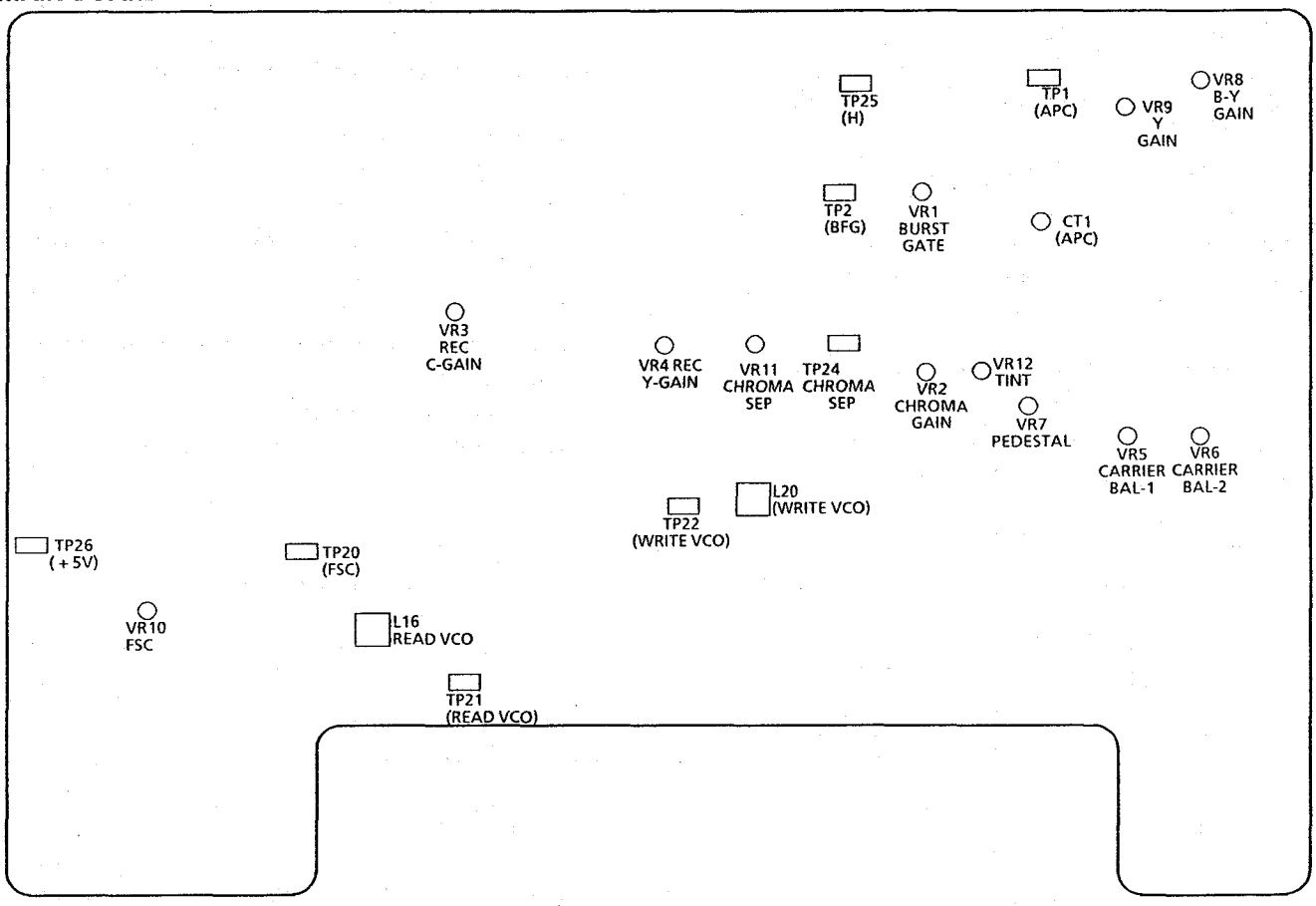
0.5 ⟶ 0.5 pF 2.5 ⟶ 2.5 pF
75 ⟶ 0.75 pF 33 ⟶ 33 pF
1 ⟶ 1 pF 82 ⟶ 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.

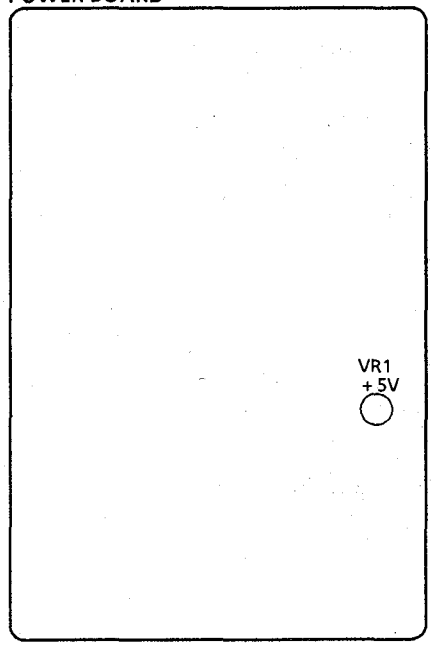


LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

MAIN BOARD



POWER BOARD



(10) Pedestal adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	**Rear panel**
Adjust:	**VR7 (PEDESTAL)**	**Main board**

- Supply the composite color bar signal to the SOURCE COMP connector.
- While observing the waveform monitor, adjust VR7 on the Main board so that the black level becomes 0 $^{+2}_{-0}$ IRE (0 $^{+14}_{-0}$mV).

CAUTION : Even if VR7 is turned too much, the black bar will be touched to the blanking level. It therefore should be adjusted for just touching to the blanking level.

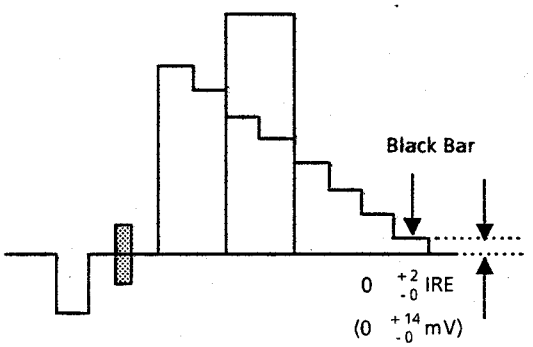


Fig 4-5

(11) Y gain adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	
Adjust:	**VR9 (Y GAIN)**	**Main board**

- Supply the composite color bar signal to the SOURCE COMP connector.
- While observing the waveform monitor, adjust VR9 on the Main board so that Y signal (white bar) level becomes 98 IRE ± 3 IRE (700 $^{+21}_{-0}$mV).

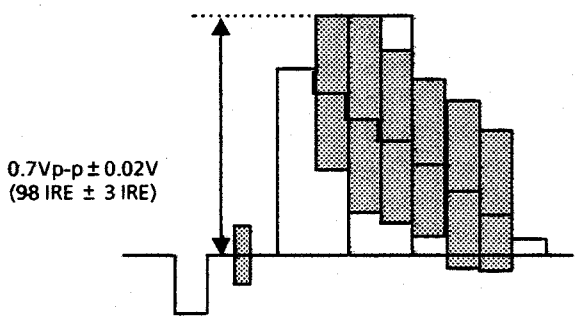


Fig 4-6

CAUTION : When VR9 is turned too much, the black and white bar will be suppressed.

(12) Tint, chroma gain and B-Y gain adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	**Rear panel**
Adjusts:	**VR12 (TINT)**	**Main board**
	VR2 (CHROMA GAIN)	**Main board**
	VR8 (B-Y GAIN)	**Main board**

- Supply the composite color bar signal to the SOURCE COMP connector.
- While observing the vectorscope, adjust VR12, VR2 and VR9 on the Main board so that the all vectors fall into their respective boxes.

Effect of controls

VR2 -- Chroma Gain (R-Y Gain)
VR12 -- Tint
VR8 -- B-Y Gain

(13) Chroma separation adjustment

Test point:	**TP24(CHROMA SEP)**	**Main board**
Adjust:	**VR11(CHROMA SEP)**	**Main board**

- Supply the linearity signal with carrier component to SOURCE COMP connector.
- Connect the oscilloscope to TP24 on the Main board.
- Connect the external trigger input of oscilloscope to TP25 on the Main board and set the oscilloscope to H rate.
- While observing the oscilloscope, adjust VR11 on the Main board so that the carrier component becomes minimum.

(5) Video fade white Level adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	**Rear Panel**
Adjust:	**VR4 (REC Y GAIN)**	**Main board**

- Press the VIDEO FADE button on the Fade control section.
- Press the WHITE button on the COLOR SELECT section.
- Press the FADE START button.
- While observing the waveform monitor, adjust VR4 on the Main board so that White level becomes 81 IRE (580mV) ± 2.8 IRE (20mV) (PAL).

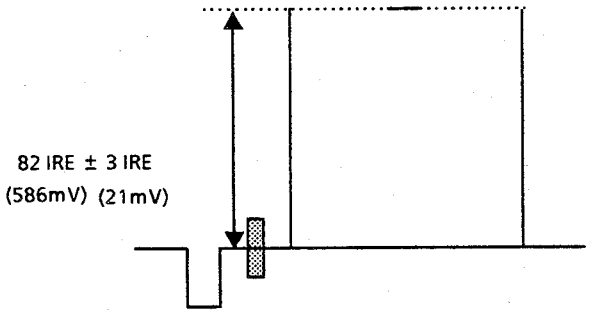


Fig. 4-1

(6) REC OUT C gain adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	**Rear Panel**
Adjust:	**VR3 (REC C GAIN)**	**Main board**

- Keep the connection and condition for step (5).
- While observing the waveform monitor, adjust VR3 on the Main board so that the burst level becomes 42 IRE (300mV) (PAL).

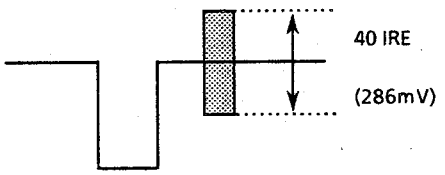


Fig. 4-2

(7) APC adjustment

Test points:	**TP1 (APC)**	**Main board**
Adjust:	**CT1 (APC)**	**Main board**

- Disconnect the coaxial cable from the SOURCE COMP connector on the rear panel.
- Connect the frequency counter to TP1 on the Main board.
- Adjust CT1 on the Main board for 4.433619 MHz ± 10Hz (PAL).

(8) Burst gate pulse (BGP) width adjustment

Test points:	**TP2 (BFG)**	**Main board**
Adjust:	**VR1 (BURST GATE)**	**Main board**

- Connect the coaxial cable between the VIDEO OUT connector of the test signal genenator and the SOURCE COMP connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal genenator.
- Connect the oscilloscope to TP2 on the Main board.
- Connect the external trigger input of oscilloscope to TP25 on the Main board and set the oscilloscope to H rate and expand the holizontal blanking period.
- Set the oscilloscope by delaying the sweep to 1 µs/DIV.
- Adjust VR1 on the Main board so that the duty of waveform at TP2 becomes 7.8 µsec ± 0.1 µsec.

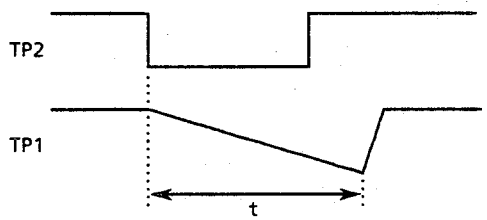


Fig 4-3

(9) Carrier balance adjustment

Test point:	**REC VIDEO OUT (COMP) connector**	**Rear panel**
Adjusts:	**VR5 (CARRIER BAL -1)**	**Main board**
	VR6 (CARRIER BAL -2)	**Main board**

- Supply the composite color bar signal to SOURCE COMP connector.
- Set the GAIN control of vectorscope to maximum.
- Adjust VR5 and VR6 on the Main board so that the vector are positioned on the center of the vectorscope and the carrier leakage of the video signal on the waveform monitor becomes minimized.

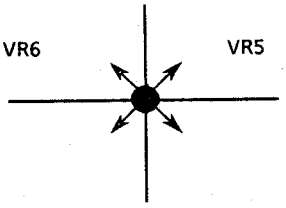


Fig 4-4

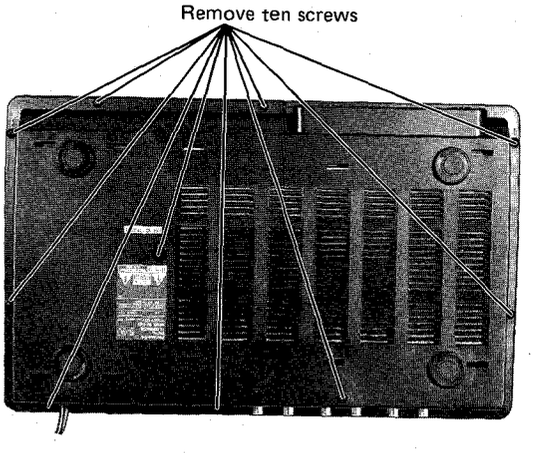
ADJUSTMENT PROCEDURE

1. Test Equipment Required

- Oscilloscope (Dual trace, Delayed sweep, 50MHz bandwidth)
- Digital voltmeter
- Frequency counter (More than 7 digits)
- Underscanned color video monitor
- Test signal generator (Color bar and Cross hatch signals)
- Waveform monitor
- Vectorscope
- Audio generator

2. Disassembling Procedure for adjustment

- Remove ten screws holding the edge of top cover and open the top cover.
- Remove the top shield cover.



3. Connection

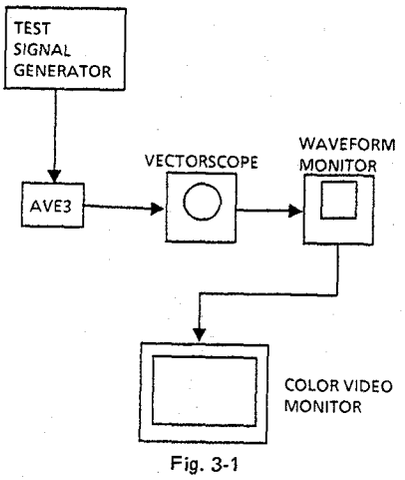


Fig. 3-1

- Connect the coaxial cable between the REC VIDEO OUT connector on the rear panel of WJ-AVE3 and the VIDEO IN connector of the waveform monitor.
- Connect the coaxial cable between the other VIDEO IN connector of the waveform monitor and the VIDEO IN connector of the vectorscope.
- Terminate the other VIDEO IN connector of the vectorscope with the 75-ohm terminator.
- Connect the coaxial cable between the VIDEO OUT connector of the waveform monitor and the VIDEO IN connector of the color video monitor.
- Terminate the other VIDEO IN connector of the color video monitor with 75 ohms.

4. Adjustment Procedure

- Refer to LOCATION OF TEST POINTS AND ADJUSTING CONTROLS.

(1) +5V adjustment

Test point:	**TP26 (+ 5V)**	**Main board**
Adjust:	**VR1 (+ 5V ADJ)**	**Power board**

- Connect the digital voltmeter to TP26 on the Main board.
- Adjust VR1 on the Power board for 5.0V ± 0.02V.

(2) FSC adjustment

Test point:	**TP20 (FSC)**	**Main board**
Adjust:	**VR10 (FSC)**	**Main board**

- Connect the frequency counter to TP20 on the Main board.
- Adjust VR10 on the Main board for 4.433619 MHz ± 5Hz (PAL).

(3) Read Voltage Controlled Oscillator (VCO R) adjustment

Test point:	**TP21 (R VCO)**	**Main board**
Adjust:	**L16 (R VCO)**	**Main board**

- Connect the digital voltmeter to TP21 on the Main board.
- Adjust L16 on the Main board for 2.8V ± 0.1V.

(4) Write Voltage Controlled Oscillator (VCO W) adjustment

Test points:	**TP22 (W VCO)**	**Main board**
Adjusts:	**L20 (W VCO)**	**Main board**

- Connect the coaxial cable between the VIDEO OUT connector of the test signal genenator and the SOURCE COMP connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal genenator.
- Connect the digital voltmeter to TP22 on the Main board.
- Adjust L20 on the Main board for 2.8V ± 0.1V

27	S VSS	----	Ground
28	YCLK21	----	Yclk 21
29	YCLKI	In	Y clock for A/D Converter
30	RCLKI	In	R clock for A/D Converter
31	VDD	In	+ 5V DC Power
32	VSS	----	Ground
33	DATA7I	----	Data 7I
34	DATA6I	----	Data 6I
35	DATA5I	----	Data 5I
36	DATA4I	----	Data 4I
37	DATA3I	----	Data 3I
38	DATA2I	----	Data 2I
39	DATA1I	----	Data 1I
40	DATA0I	----	Data 0I
41	REG3I	----	Reg 3I
42	REG2I	----	Reg 2I
43	REG1I	----	Reg 1I
44	REG0I	----	Reg 0I
45	STI	----	ST 2I
46	VSS	----	Ground
47	PALI	In	+ 5V DC Power
48	VDD	In	+ 5V DC Power
49	TCK1I	----	Ground
50	TCK2I	----	Ground
51	TD15I	----	Ground
52	TD14I	----	Ground
53	TD13I	----	Ground
54	VIDE0I	In	Video 0I
55	VIDE01I	In	Video 1I
56	VIDE02I	In	Video 2I
57	VIDE03I	In	Video 3I
58	VIDE04I	In	Video 4I
59	VIDE05I	In	Video 5I
60	VIDE06I	In	Video 6I
61	VIDE07I	In	Video 7I
62	VDD	In	+ 5V DC Power
63	VSS	----	Ground
64	TD12I	----	Ground
65	TD11I	----	Ground
66	TD10I	----	Ground
67	TD9I	----	Ground
68	TD8I	----	Ground
69	TD7I	----	Ground
70	TD6I	----	Ground
71	TD5I	----	Ground
72	TD4I	----	Ground
73	TD3I	----	Ground
74	TD2I	----	Ground
75	TD1I	----	Ground
76	TD0I	----	Ground
77	VSS	----	Ground
78	TESTZI	----	Ground
79	VDD	In	+ 5V DC Power
80	TEST150	Out	Not used
81	TEST140	Out	Not used
82	TEST130	Out	Not used
83	TEST120	Out	Not used
84	TEST110	Out	Not used
85	TEST100	Out	Not used
86	TEST90	Out	Not used
87	TEST80	Out	Not used
88	TEST70	Out	Not used
89	TEST60	Out	Not used
90	TEST50	Out	Not used
91	TEST40	Out	Not used
92	TEST30	Out	Not used
93	VDD	In	Not used
94	VSS	----	Ground
95	TEST20	Out	Not used
96	TEST10	Out	Not used
97	TEST00	Out	Not used
98	SVDD	In	+ 5V DC Power
99	SVSS	----	Ground
100	Y70	Out	Rec Y7
101	Y60	Out	Rec Y6
102	Y50	Out	Rec Y5
103	Y40	Out	Rec Y4
104	Y30	Out	Rec Y3
105	Y20	Out	Rec Y2
106	Y10	Out	Rec Y1
107	Y00	Out	Rec Y0
108	VDD	In	+ 5V DC Power
109	SVDD	In	+ 5V DC Power
110	VSS	----	Ground
111	VSS	----	Ground
112	C70	Out	Rec C7
113	C60	Out	Rec C6
114	C50	Out	Rec C5
115	C40	Out	Rec C4
116	C30	Out	Rec C3
117	C20	Out	Rec C2
118	C10	Out	Rec C1
119	C00	Out	Rec C0
120	SVSS	----	Ground
121	WPI	----	Ground
122	SVDD	In	+ 5V DC Power
123	NBLKO	Out	NC BLK
124	VDD	In	+ 5V DC Power

34	DATA2	In	Data 2
35	DATA1	In	Data 1
36	DATA0	In	Data 0
37	VSS	----	Ground
38	REG2	In	Register 2
39	VDD	In	+ 5V DC power
40	REG1	In	Register 1
41	REG0	In	Register 0
42	ST	In	Strobe Pulse for Data Latch Gate
43	TIN1	In	Ground
44	TIN2	In	Ground
45	CSEL	In	
46	PCO	Out	Phase comparutor
47	SVDD	In	+ 5V DC power
48	SVSS	----	Ground
49	OSCI	In	
50	----	----	Not used
51	VSS	----	Ground
52	OSCO	Out	
53	SVSS	----	Ground
54	CLK9	Out	
55	SVDD	In	+ 5V DC power
56	RCLK	Out	
57	SVSS	----	Ground
58	MCKA19	Out	
59	SVDD	In	+ 5V DC power
60	SVSS	----	Ground
61	EDGE	Out	Edge
62	SVSS	----	Ground
63	CHR	Out	Character
64	SVDD	In	+ 5V DC power
65	TIN4	In	Ground
66	VGRA7	Out	
67	VGRA6	Out	
68	VGRA5	Out	
69	VGRA4	Out	
70	VGRA3	Out	
71	VGRA2	Out	
72	VGRA1	Out	
73	SVDD	In	+ 5V DC power
74	TIN3	In	Ground
75	PAL	In	Ground
76	VSS	----	Ground
77	HRST	Out	
78	HREF	Out	Not used
79	V	In	Vertical Drive Pulse
80	H	In	Horizontal Drive Pulse
81	CH1	In	Character 1H
82	CH2	In	+ 5V DC power
83	TITLE	In	Title
84	TEST0	Out	Not used
85	TEST1	Out	Not used
86	TEST2	Out	Not used
87	VDD	In	+ 5V DC power
88	RST	In	+ 5V DC power
89	VSS	----	Ground
90	TEST3	Out	Not used
91	TEST4	Out	Not used
92	TEST5	Out	Not used
93	TEST6	Out	Not used
94	TEST7	Out	Not used
95	TEST8	Out	Not used
96	TEST9	Out	Not used
97	CK	In	Not used
98	SUDD	In	+ 5V DC power
99	MCLK19	Out	clock
100	----	----	Not used

4-4 Back Color/Art/Colorcorrect/Superimpose/ Negative/Fade control IC

This IC (MN53080LBR1) has the following functions inside it.

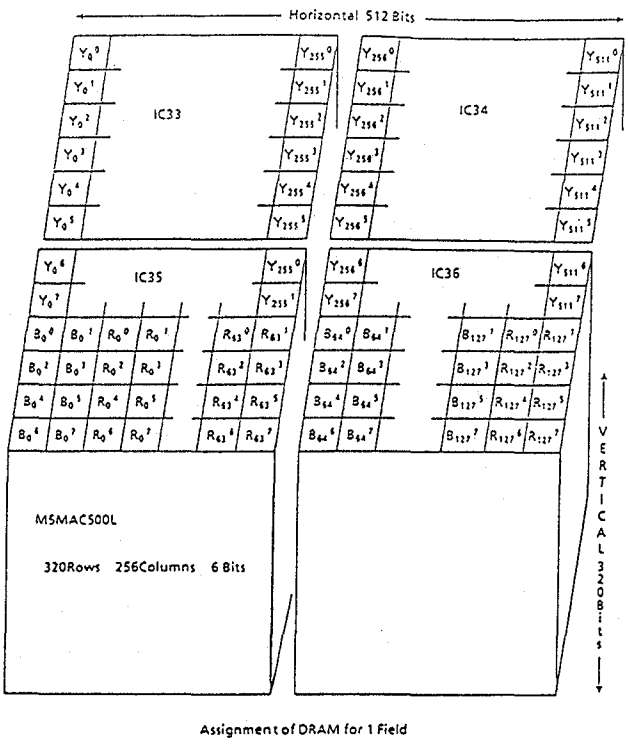
- Back color control Function
- Art control Function
- Color correct Function
- Superimpose Function
- Negative Function
- Fade control Function

Pin No.	Pin Name	In/Out	Description
1	VSS	----	Ground
2	VI	In	Read Vertical Drive pluse
3	F4SCI	In	F4 SC1
4	BSCI	In	B SC I
5	BLKI	In	Blanking I
6	BFPI	In	Burst Flug Pulse
7	LSWI	----	L switch I
8	TSEL0I	----	Ground
9	TSEL1I	----	Ground
10	TSEL2I	----	Ground
11	NC11	----	Ground
12	GRA0I	In	+ 5V DC Power
13	GRA1I	In	Gra 1I
14	SVDD	In	+ 5V DC Power
15	VDD	In	+ 5V DC Power
16	TESTYI	----	Ground
17	VSS	----	Ground
18	GRA2I	In	Gra 2I
19	GRA3I	In	Gra 3I
20	GRA4I	In	Gra 4I
21	GRA5I	In	Gra 5I
22	GRA6I	In	Gra 6I
23	GRA7I	In	Gra 7I
24	CHRI	In	Chr I
25	BLCHRI	In	Edge I
26	SVDD	In	+ 5V DC Power

4-2 Memory IC

The capacity of Memory IC (YWM5M4C500L) is 6(Graduation) x 256(Horizontal) x 320(Scanning line) (Max) = 491520 bits/chip.

The assignment of 8 memories is as follows.



Assignment of DRAM for 1 Field

Fig. 4-1 Assignment of Memory IC

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	----	Ground
2	SID1	In	Data 1
3	SID2	In	Data 2
4	SID3	In	Data 3
5	SOD1	Out	Memory Data 1
6	SOD2	Out	Memory Data 2
7	SOD3	Out	Memory Data 3
8	SOD4	Out	Memory Data 4
9	SOD5	Out	Memory Data 5
10	SOD6	Out	Memory Data 6
11	SID4	In	Data 4
12	SID5	In	Data 5
13	SID6	In	Data 6
14	IR7/A7	In	Address 7
15	IR6/A6	In	Address 6
16	IR5/A5	In	Address 5
17	IR4/A4	In	Address 4
18	IR3/A3	In	Address 3
19	IR2/A2	In	Address 2
20	IR1/A1	In	Address 1
21	A8/A0	In	Address 0
22	IRS/CAS	In	Column Address Set Pulse
23	RAS/IRE	In	Row Address Set Pulse
24	SIC	In	Serial Input Clock
25	SOC	In	Serial Output Clock
26	SIE	----	Ground
27	SOE	In	Output Enable-1 (Positive)
28	VCC	In	+ 5V DC Power

4-3 Title Memory/Edge/Scroll

This IC (MN53020LBQ2) has the following functions inside it.

- Title Memory Function
- Edge Selector Function
- Scroll Function

Pin No.	Pin Name	In/Out	Description
1	VSS	----	Ground
2	RASWN	Out	RASWN
3	LM4H	In	Line memory 4
4	LM3H	In	Line memory 3
5	LM2H	In	Line memory 2
6	LM1H	In	Line memory 1
7	LM0H	In	Line memory 0
8	ADD9	Out	Address 9
9	SVSS	----	Ground
10	CAS	Out	Columm address strove
11	SVDD	In	+ 5V DC power
12	RAMD0	Out	RAM Data Out
13	RAMD1	In	RAM Data In
14	SVSS	----	Ground
15	WEN	Out	Write Enable
16	RAS	Out	Road Address strove
17	ADD0	Out	Address 0
18	ADD1	Out	Address 1
19	ADD2	Out	Address 2
20	ADD3	Out	Address 3
21	ADD4	Out	Address 4
22	ADD5	Out	Address 5
23	ADD6	Out	Address 6
24	ADD7	Out	Address 7
25	ADD8	Out	Address 8
26	VSS	----	Ground
27	TSEL1	In	Ground
28	TSEL2	In	Ground
29	DATA7	In	Data 7
30	DATA6	In	Data 6
31	DATA5	In	Data 5
32	DATA4	In	Data 4
33	DATA3	In	Data 3

34	YCD7	Out	Y. Chroma Data 7
35	YCD6	Out	Y. Chroma Data 6
36	YCD5	Out	Y. Chroma Data 5
37	YCD4	Out	Y. Chroma Data 4
38	YCD3	Out	Y. Chroma Data 3
39	YCD2	Out	Y. Chroma Data 2
40	YCD1	Out	Y. Chroma Data 1
41	YCD0	Out	Y. Chroma Data 0
42	MC3	In	Memory Chroma Data 3
43	MC2	In	Memory Chroma Data 2
44	MC1	In	Memory Chroma Data 1
45	MC0	In	Memory Chroma Data 0
46	VSS	----	Ground
47	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
48	VDD	In	+ 5V DC Power
49	MY7	In	Memory Y Data 7
50	MY6	In	Memory Y Data 6
51	MY5	In	Memory Y Data 5
52	MY4	In	Memory Y Data 4
53	MY3	In	Memory Y Data 3
54	MY2	In	Memory Y Data 2
55	MY1	In	Memory Y Data 1
56	MY0	In	Memory Y Data 0
57	VSS	----	Ground
58	VDD	In	+ 5V DC Power
59	OEFP3	Out	Output Enable 3 (Positive)
60	OEFP2	Out	Not used
61	OEFP1	Out	Output Enable 1 (Positive)
62	OEFN3	Out	Output Enable 3 (Negative)
63	OEFN2	Out	Not used
64	OEFN1	Out	Output Enable 1 (Negative)
65	SOC3	Out	Serial Output Clock 3
66	SOC2	Out	Serial Output Clock 2
67	SOC1	Out	Serial Output Clock 1
68	VSS	----	Ground
69	VDD	In	+ 5V DC Power
70	SIC3	----	Not Used
71	SIC2	Out	Serial Input Clock 2
72	SIC1	Out	Serial Input Clock 1
73	RAS	Out	Row Address Set Pulse
74	CAS	Out	Column Address Set Pulse
75	A0	Out	Address 0
76	A1	Out	Address 1
77	VSS	----	Ground
78	TEST	In	Ground
79	VDD	In	+ 5V DC Power
80	A2	Out	Address 2
81	A3P	----	Not used
82	A3N	Out	Address 3 (Negative)
83	A4	Out	Address 4
84	A5	Out	Address 5
85	A6	Out	Address 6
86	A7	Out	Address 7
87	CTM3	Out	Chroma Data 3
88	CTM2	Out	Chroma Data 2
89	CTM1	Out	Chroma Data 1
90	CTM0	Out	Chroma Data 0
91	YTM7	Out	Y Data 7
92	YTM6	Out	Y Data 6
93	YTM5	Out	Y Data 5
94	YTM4	Out	Y Data 4
95	YTM3	Out	Y Data 3
96	YTM2	Out	Y Data 2
97	YTM1	Out	Y Data 1
98	YTM0	Out	Y Data 0
99	CAD7	In	A/D Chroma Data 7
100	CAD6	In	A/D Chroma Data 6
101	CAD5	In	A/D Chroma Data 5
102	CAD4	In	A/D Chroma Data 4
103	CAD3	In	A/D Chroma Data 3
104	CAD2	In	A/D Chroma Data 2
105	CAD1	In	A/D Chroma Data 1
106	CAD0	In	A/D Chroma Data 0
107	CADCK	Out	Clock for Chroma A/D Converter
108	VDD	In	+ 5V DC Power
109	CSL	Out	Clock for R-Y, B-Y Switching
110	VSS	----	Ground
111	YAD7	In	A/D Y Data 7
112	YAD6	In	A/D Y Data 6
113	YAD5	In	A/D Y Data 5
114	YAD4	In	A/D Y Data 4
115	YAD3	In	A/D Y Data 3
116	YAD2	In	A/D Y Data 2
117	YAD1	In	A/D Y Data 1
118	YAD0	In	A/D Y Data 0
119	YADCK	Out	Clock for Y A/D Converter
120	WHR	----	Not Used
121	2S	----	Not Used
122	SOR	----	Not Used
123	VDD	In	+ 5V DC Power
124	VCO	In	Voltage Controlled Oscillator for Write Clock

3-1-2 D/A Converter Circuit

This circuit is consisting of IC37, C4, IC6, RA1 and RA3 and convert the 8 bit digital signals of Y, R-Y, B-Y signals into pin identification of IC37,

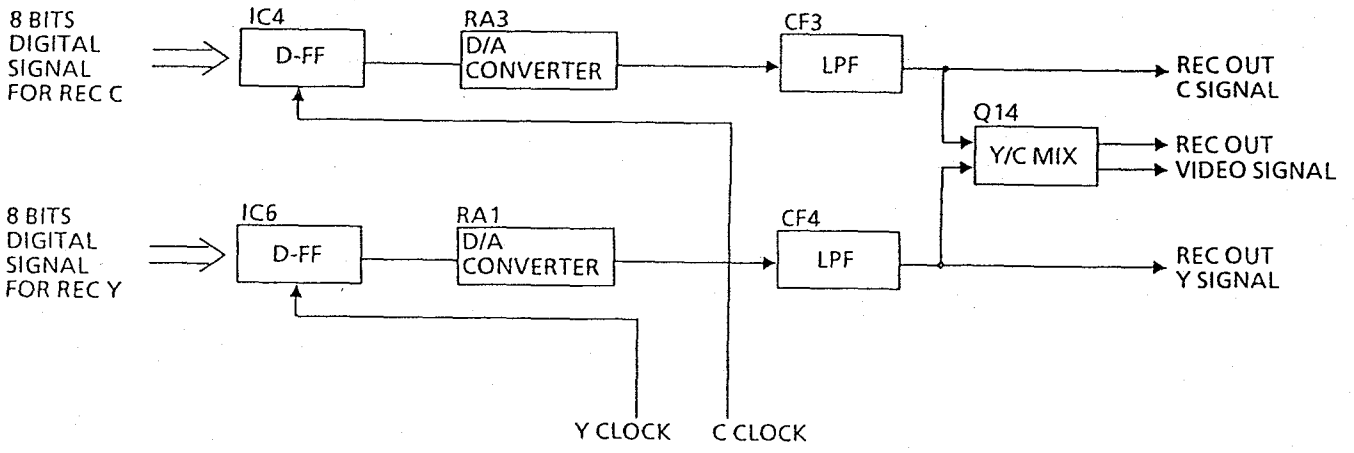


Fig. 3-5 D/A Converter Circuit

4 Digital Signal Section

This circuit consisting of the following IC's and their functions are as follows.

4-1 Memory Control IC

Memory Control IC (MN53040LVX3) has the following functions and generators inside it.

(a) Clock Pulse Generator for A/D Converter
(b) Clamp Pulse Generator for A/D Converter
(c) Blanking Signal Generator for Decoder
(d) Control Pulse Generator for Memory IC (M5M4C500L)
(e) Picture in Picture Function

- Mosaic Function
- Still Function
- Strobe control Function
- Squeeze Function
- Paint Function

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VCO	----	Not Used
2	VSS	----	Ground
3	WPC	Out	Write PLL Phase Comparator
4	WCLMP	Out	Write Clamp Pulse
5	WHBLK	Out	Write Horizontal Blanking Pulse
6	EXSYNC	In	External Sync from Sync Separator
7	ST	In	Strobe Pulse for Data Latch Gate
8	REG0	In	Register 0
9	REG1	In	Register 1
10	REG2	In	Register 2
11	REG3	In	Register 3
12	D0	In	Data 0
13	D1	In	Data 1
14	BS	In	B ch/A ch Select (H : B ch, L : Ach)
15	VDD	In	+ 5V DC Power
16	HIGH	In	Resolution High/Low Control (H : 14.3MHz, L : 9.6MHz)
17	VSS	----	Ground
18	D2	In	Data 2
19	D3	In	Data 3
20	D4	In	Data 4
21	D5	In	Data 5
22	D6	In	Data 6
23	D7	In	Data 7
24	V	In	Read Vertical Drive Pulse
25	H	In	Read Horizontal Drive Pulse
•26	HS	In	Read H. Reset Pulse
27	YCLK	In	Y Clock for A/D Converter
28	YCLK	----	Not Used
29	RCLK	----	Not Used
30	VSS	----	Ground
31	FIELD	In	Field/Frame Mode Select (H : Field, L : Frame)
32	RST	in	Reset for Initialize
33	ANOTH	Out	Picture in Picture Pulse

3-3 Analog Signal Section

3-3-1 A/D Converter Circuit

This circuit consisting of IC1, IC2, IC12, IC13, IC14, Q34, IC17, Q35, IC18 and IC19 and convert the analog Y and C (R-Y, B-Y) signal into 7 bits digital signal.

The R-Y & B-Y signals are selected alternately by 2.4 MHz (156fH) Pulse fed to pin 10 of IC11 so that the R-Y and B-Y signals are chopped into 128 bits per line.

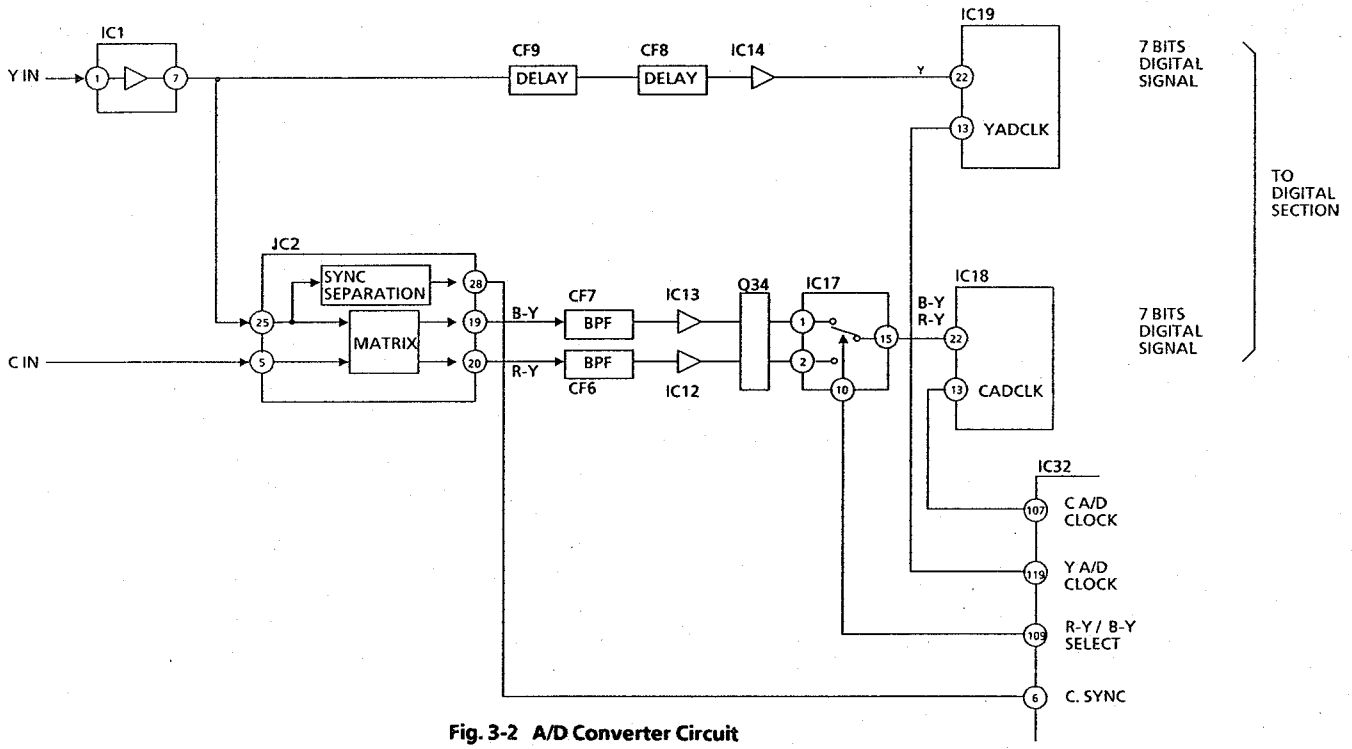


Fig. 3-2 A/D Converter Circuit

The R-Y & B-Y signal is then fed to pin 22 of A/D converter IC18 and converted into 7 bits digital signal (CAD1-CAD7) fed to pins 99-105 of Memory write control gate array IC32.

The Y signal is also fed to the other A/D converter IC19 in order to convert Y signal into 7 bits digital signal and 512 bits per line.

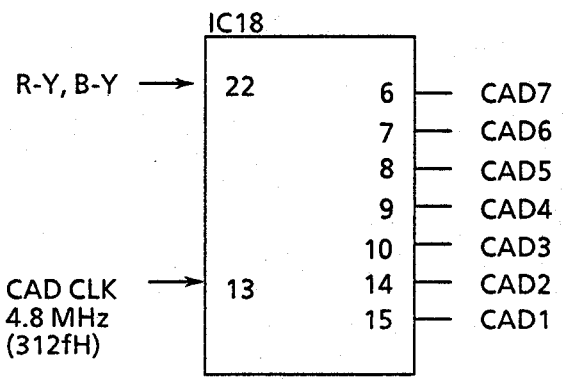


Fig. 3-3 Chroma A/D Conversion

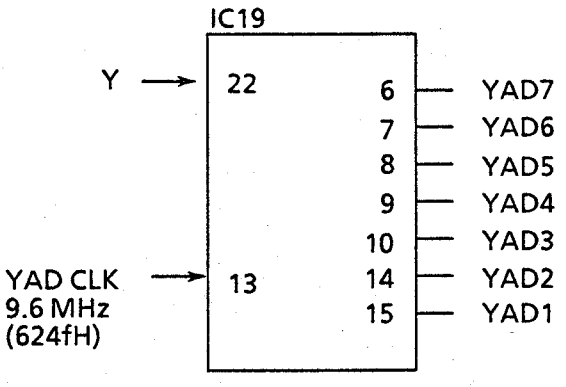


Fig. 3-4 Luminance A/D Conversion

CIRCUIT DESCRIPTION

1. POWER BOARD

This board receives AC power through the power cord and regulates + 5V DC, + 12V DC and -12V DC voltage.
AC power is rectified by D1, DC appears at cathodes side of D1, therefore supplying current through R2 and R9 turns the switching transistor Q1 ON.
As a result, the voltage is applied to the primary winding (connecting between pins P2 and P1) of T1 and the bias voltage is generated at the bias coil (connecting between pins V2 and V1) of T1 due to induction.

2. SWITCH BOARD

This board contains the key scanning section and the audio signal control/mixing section.

2-1 Key Scanning Section

This circuit sends out all control signals to the Main board by pressing the switches on this board. At the same time, LEDs light by pressing the switches.

2-2 Audio Signal Section

The audio amplifier circuit mixes the SOURCE AUDIO IN (L/R) and AUX AUDIO IN (L/R) signals and obtains the REC AUDIO OUT (L/R) on the rear panel and the HEADPHONE OUT on the front panel.

3. MAIN BOARD

3-1 A / V synchro circuit

The audio signal from SOURCE AUDIO IN (L/R) or AUX AUDIO IN (L/R) are fed through VR9, VR10, IC2 (b), IC8 and IC4 (b).
The audio signal obtained at pin 7 of IC4 (b) is fed though IC7 (a) to IC7 (b) and this audio synchro slice level is compared with A / V synchro strobe level from pin 23 of E4.
The obtained audio pulse from pin 7 of IC7 is fed though Q21 to pin 14 of E4 and supplied to pin 25 of IC21 .
This audio pulse controls the IC21 (MICON) for A / V synchro.

3-2 Audio fade circuit

The Audio fade control voltage from pin 15 of E4 is fed to pin 5 and pin 10 of IC8 on the switch board.
This control signal controls the audio output signal from pin 2 and pin 13 of IC8.

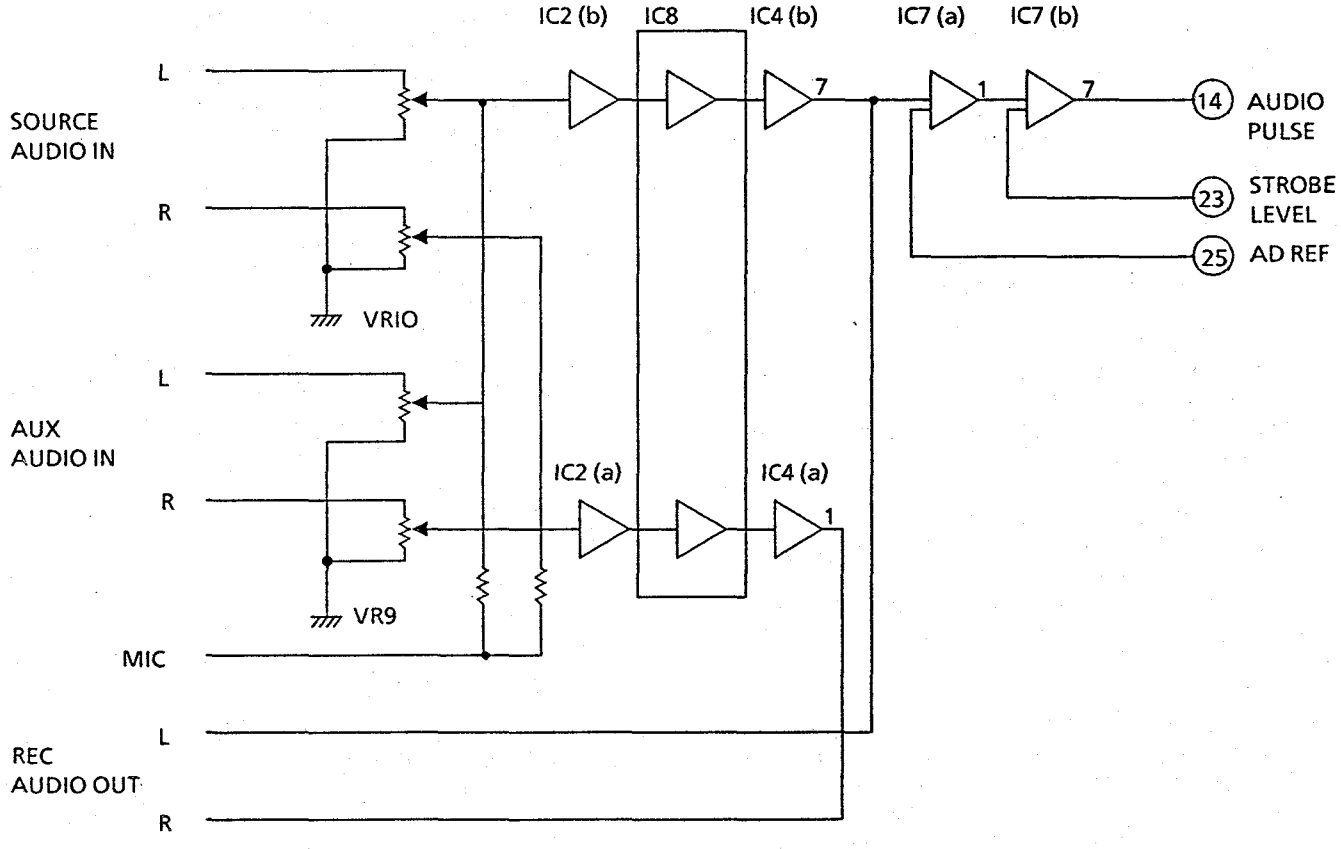


Fig. 3-1 A / V Synchro Block

39. **Scroll Speed Control (SPEED)**
This control adjusts the scrolling speed from 0.6 seconds to 8.1 seconds.

40. **Superimpose Effect ON/OFF Button (SUPERIMPOSE EFFECT)**
This is the Superimpose Effect on/off button. Only when this button is lit, the overall superimpose effects become available.

41. **Memory Page 1 Button (PAGE 1)**
This button has 2 functions. One is to memorize the superimposed image into the memory page 1, the other one is to recall the image from it.

42. **Memory Page 2 Button (PAGE 2)**
This button has 2 functions. One is to memorize the superimposed image into the memory page 2, the other one is to recall the image from it.

43. **Store Button (STORE)**
It is nessary to press this button to enter an image into memory. This button should be pressed before the Memory Page 1 Button (41) or the Memory Page 2 Button (42).

44. **Display Button (DISPLAY)**
The superimpose video signal supplied to the Superimpose Input Connector/Jack on the rear panel will be displayed on the screen by pressing this button (LED lights). The Superimpose Effect ON/OFF Button (40) should be pressed at this time to perform the Display function.

45. **Superimpose Key Level Control (KEY LEVEL)**
This control adjusts the key level of the superimpose video signal.

Colour Correction

It is necessary to press the Colour Correction ON/OFF Button (46) to perform the functions from item-46 to item-50.

46. **Colour Correction ON/OFF Button (COLOUR CORRECTION)**
This is the Colour Correction on/off button. Only when this button is pressed (LED lights), the overall colour correction becomes available.

47. **Colour Saturation Control (SATURATION)**
This control adjusts the colour level of the images of the Source Video Signal.
When this control is set to the MAX position, it generates the equal colour level to the Source Video Signal.

48. **Mono Colour Selector (MONO)**
When this button is pressed, the LED lights. The Source Video Signal becomes a single colour. The RGB Joystick is used to select the colour. Placing the joystick in the center makes the video signal Black and white.

49. **Colour Hold Button (HOLD)**
The colour selected by the RGB Joystick (50) can be held by pressing this button (LED lights).

50. **RGB Joystick (R/G/B)**
This Joystick permits you to balance or change the tint of the images of the Source Video Signal by moving its position. When this Joystick is positioned at center, it generates the original colour of the Source Video Signal.

Inputs/Outputs

51. **Y/C Source Input Connector (SOURCE Y/C)**
This source input connector is for use with S-VHS products. Use a S-Video Cable (4 pin) to feed the S-Video Signal to this connector.

52. **Composite Video Source Input Connector (SOURCE COMP.)**
This source input connector is for use with standard video connections. Use shielded video cable (75 ohms) to feed the video signal to this connector.

53. **Source Audio Input Jacks (SOURCE AUDIO IN)**
A stereo audio signal can be used for these jacks. When monaural audio is to be used, connect it to the L-channel. The monaural audio output can be obtained at both R-channel and L-channel Audio Output Jacks (59).

54. **Y/C Superimpose Input Connector (SUPERIMPOSE Y/C)**
This superimpose input connector is for a S-VHS type camera. Use a S-Video Cable (4 pin) to feed the S-Video Signal to this connector.

55. **Camera Superimpose Input Connector (SUPERIMPOSE COMP.)**
This superimpose input connector is for a video signal from a standard camera. Use a shielded cable (75 ohms) to feed the video signal to this connector.

56. **Auxiliary Audio Input Jacks (AUX AUDIO IN)**
A stereo audio signal can be used for these jacks. When monaural audio is to be used, connect it to the L-channel. The monaural audio output can be obtained at both R-channel and L-channel Audio Output Jacks (59).

57. **Y/C Video Output Connector (REC VIDEO OUT Y/C)**
This is the recording output connector for the S-VHS VTR. Use a S-Video Cable (4 pin) to supply the S-Video Signal to the S-VHS VTR.

58. **Composite Video Output Connector (REC VIDEO OUT COMP.)**
This is the recording output connector for the standard VTR. Use a shielded video cable (75 ohms) to supply the video signal to the VTR.

59. **Audio Output Jacks (AUDIO OUT)**
The stereo audio signal can be obtained at these connectors for recording.

19. **Graduation Button (GRADUATION)**
When this button is pressed, the LED lights up, the back colour of the upper portion on the screen is less intense and gradually increases to the lower portion of the screen.

20. **Back Colour Selector (SELECT)**
Any one of 8 back colours can be selected one after another by pressing this button repeatedly.

21. **Microphone Audio Fader (MIC)**
This fader adjusts the audio level of the microphone connected to the Microphone Input Jack (3)

22. **Auxiliary Audio Fader (AUX)**
This fader adjusts the audio level of the auxiliary audio input connected to the Auxiliary Audio Input Jack (56).

23. **Source Audio Fader (SOURCE)**
This fader adjusts the audio level of the source audio input connected to the Source Audio Input Jack (53).

24. **Audio Fade Button (AUDIO FADE)**
This is an automatic Audio Signal Fade on/off button. The audio signals on the Audio Mixer will be fading-in/out by pressing the Fade Start Button (26) when the Audio Fade function is ON (LED is lit).

25. **Superimpose Fade Button (SUPERIMPOSE FADE)**
This is an automatic Superimposed Video Fade on/off button. The superimposed images will be fading-in/out by pressing the Fade Start Button (26) when the Superimpose Fade function is ON (LED is lit).

26. **Fade Start Button (FADE START)**
This button is used to start the automatic synchronized fading of the Video Fade, Superimpose Fade and Audio Fade together, or in any combination.

27. **Fade Out Indicator (FADE OUT)**
When the fade-out is completed, this LED indicator blinks. When the fade-in starts after pressing the Fade Start Button (26) again, this LED indicator goes off.

28. **Fade Speed Control (FADE CONTROL)**
This control adjusts the automatic fading speed from 0.6 seconds (FAST) to 8.1 seconds (SLOW).

29. **Video Fade Button (VIDEO FADE)**
This is an automatic Source Video Fade on/off button. The source video signal will be fading-in/out by pressing the Fade Start Button (26) while Video Fade function is ON (LED is lit).

30. **Black Fade Button (BLACK)**
When this button is pressed, the LED lights. When a video fade is performed the video will fade to black.

31. **White Fade Button (WHITE)**
When this button is pressed, the LED lights. When a video fade is performed the video will fade to white.

32. **Colour Fade Button (COLOUR)**
When this button is pressed, the LED lights. When a video fade is performed the video will fade to any one of 8 colours, solid or graded selected by the Graduation Button (19) and the Back Colour Selector (20).

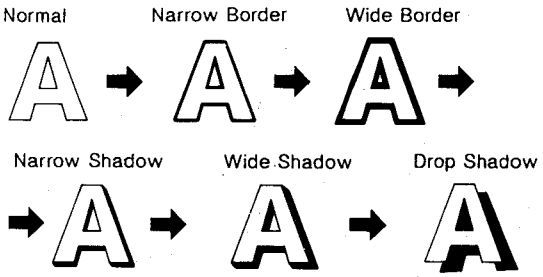
Superimpose Effects

It is necessary to press the Superimpose Effect ON/OFF Button (40) to perform the functions from item-33 to item-45.

33. **Colour Superimpose Button (COLOUR)**
This button is used to colour the superimposed images (LED lights). You can select any one of 8 colours, solid or graded by pressing the Graduation Button (19) and the Back Colour Selector (20).

34. **White Superimpose Button (WHITE)**
When this button is pressed, the LED lights, the white superimposed images will be obtained.

35. **Edge Selector (EDGE)**
Two types (shadow, border) and five kinds of edges are available by this selector as shown. The LED lights when one of edges is selected.



Notes :
1. When the superimposed images are white, you can colour the edge to any one of 8 colours, solid or graded by pressing the Graduation Button (19) and the Back Colour Selector (20)
2. When the coloured superimposed images are used, the edge colour is always black.

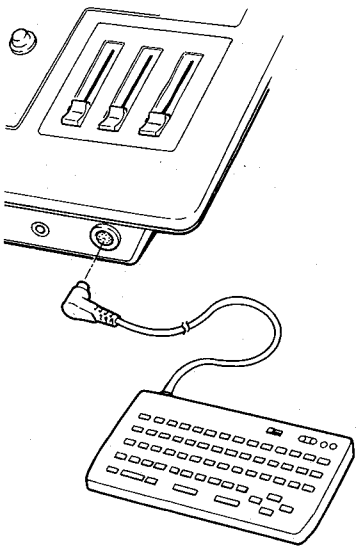
36. **Reverse Button (REVERSE)**
The superimposed images and background can be reversed by pressing this button (LED lights). However, the stored superimposed images can not be reversed.

37. **Scroll Up Button (SCROLL ↑)**
The stored superimposed images can be scrolled up the screen and removed from the screen by pressing this button. To return the images on the screen again, press this button one more time.

38. **Scroll Left Button (SCROLL ←)**
The stored superimposed images can be scrolled to the left on the screen and removed from the screen by pressing this button. To return the images on the screen again, press this button one more time.

Notes :

- During scrolling of titles in the smallest character size using WJ-TTL5, the point where new lines of character appear will gradually move up from the bottom of the screen to the middle of the screen.
- Connect the cable of the WJ-TTL5 to the Title Input Connector (4) as shown below.



5. **Operation ON/OFF Button (OPERATE)**
   Press this button to turn on the power. The LED on this button lights. Also the LED's of the Digital Effect ON/OFF Button (8), the Black Fade Button (30) and the Colour Superimpose Button (33) light and their functions are selected automatically when the Operation ON/OFF Button is pressed.

Digital Effect

It is necessary to press the Digital Effect ON/OFF Button (8) to perform the functions from item-6 to item-17.

6. **A/V Synchro Button (A/V SYNCHRO)**
   Any combination of 5 of the digital effects (Strobe, Mosaic, Paint, Negative or Art) can be synchronized to the pulse with certain levels of accompanying music or sound supplied to the Source Audio Input Jack (53), Auxiliary Audio Input Jacks (56) or Microphone Input Jack (3). The A/V Synchro functions for 0.5 seconds after being triggered. The LED on this button lights up when this button is pressed.

7. **A/V Synchro Trigger/Strobe Interval Control (LEVEL, MIN/MAX)**
   This control has 2 functions. One is the control for the trigger sensitivity of the A/V Synchro. When this control is turned to the MAX position, the A/V Synchro will be triggered by higher level sounds. When this control is turned to the MIN position, the A/V Synchro will be triggered by low level sounds.
   The other function this control has is the Strobe Interval Control. The strobe interval can be changed by this control, when the Strobe Button (9) is selected, from 0.1 seconds (at MIN position) to 2.0 seconds (at MAX position). The strobe interval can not changed when the A/V Synchro function is ON.

8. **Digital Effect ON/OFF Button (DIGITAL EFFECT)**
   This is the Digital Effect on/off button. Only when this button is pressed (LED lights), the digital effects are functional.

9. **Strobe Button (STROBE)**
   The video frames can be frozen intermittently, to achieve a strobe effect, by pressing this button (LED lights). The strobe interval can be adjusted by the A/V Synchro Trigger/Strobe Interval Control (7).
   Note :
   When the A/V Synchro function is ON, the strobe interval is fixed to 0.5 seconds.

10. **Mosaic Button (MOSAIC)**
    By adding small squares in mosaic-like patterns a design or blurred image can be created. The size of the mosaic squares can be changed in 4 steps by pressing this button repeatedly (LED lights during 4 steps).

11. **Paint Button (PAINT)**
    For a highly artistic effect, images can be transformed to resemble an oil painting of the video scene by pressing this button. The graduation of the paint effect can be changed in 4 steps by pressing this button repeatedly (LED lights during 4 steps).

12. **Negative Button (NEGATIVE)**
    The on-screen image can be transposed to look like a negative of the image by pressing this button (LED lights).

13. **Art Button (ART)**
    Any one of 8 colours can be added by pressing this button (LED lights) to the brightest portions of the on-screen picture. The key level is adjustable by the Art Level Control (14). Press the Back Colour Selection Button (20) to obtain the desired colour.

14. **Art Level Control (LEVEL)**
    This control adjusts the key level of the Art function.

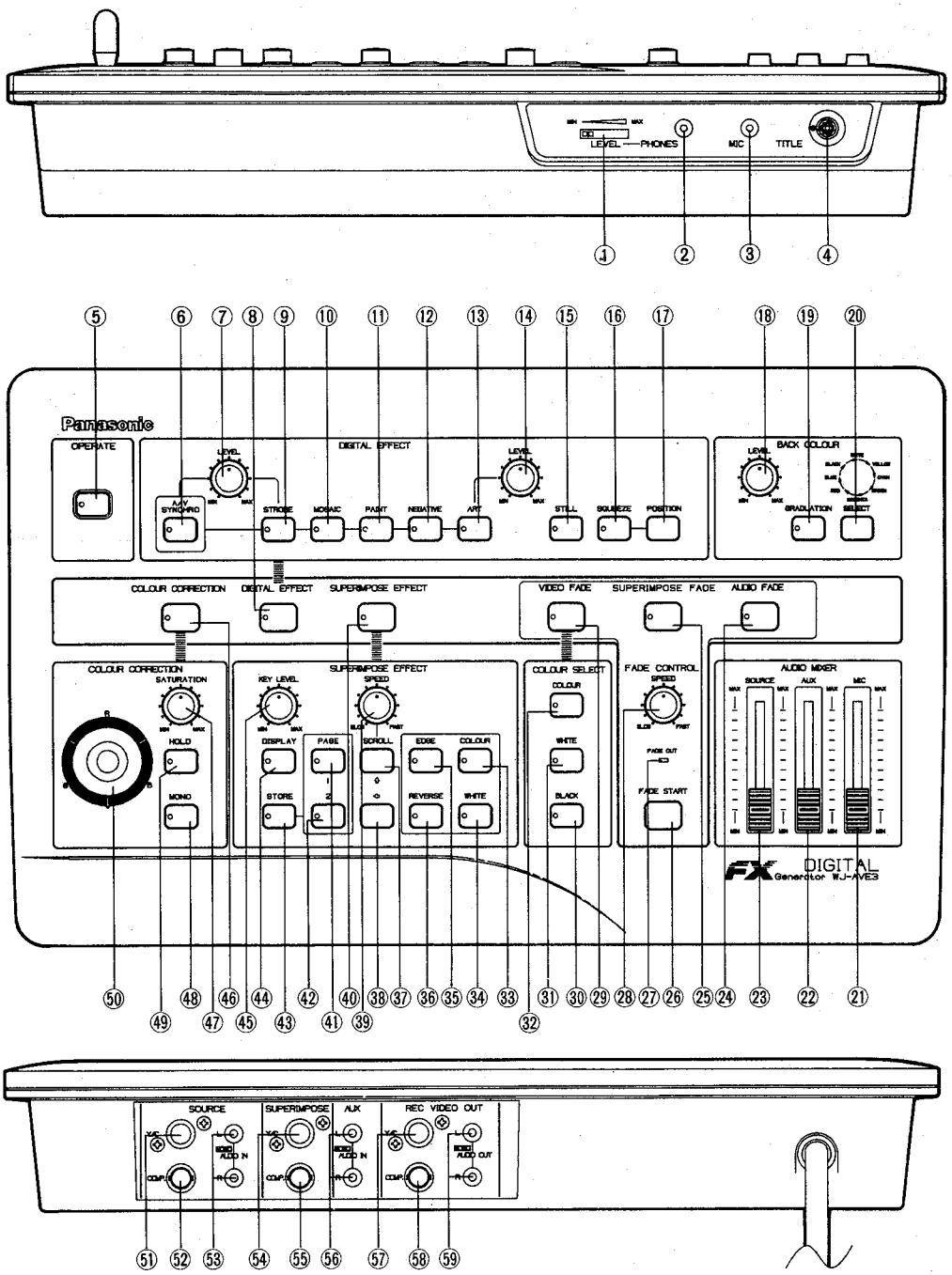
15. **Still Button (STILL)**
    An instant still or frozen image of the video can be obtained by pressing this button (LED lights).

16. **Squeeze Button (SQUEEZE)**
    A smaller version (approximately 1/4 the original size) of the full-size screen can be produced by pressing this button (LED lights).

17. **Position Selector (POSITION)**
    This selector is used to change the position of the squeezed images in any one of 9 positions on the screen's black background by pressing this button repeatedly.

18. **Back Colour Level Control (LEVEL)**
    This control adjusts the level of the colour which is selected by the Back Colour Selector (20).

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

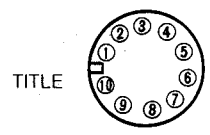


1. **Headphone Level Control (LEVEL-PHONES)**
   Adjust the audio level of the head phone with this control.

2. **Headphone Output Jack (PHONES)**
   Connect the Headphone (optional) having a 3.5 mm plug.

3. **Microphone Input Jack (MIC)**
   Connect the Microphone (optional) having a 3.5 mm plug.

4. **Title Input Connector (TITLE)**
   This connector is used to connect the optional Character Generator WJ-TTL5.
   (1) : Character IN
   (2) : Not used
   (3) : Ground
   (4) : Not used
   (5) : Sync out
   (6) : Not used
   (7) : Ground
   (8) : +9V OUT
   (9) : Ground
   (10) : Ground



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USERSERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns the user that uninsulated voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

APPEARANCE OF IC, TRANSISTOR AND DIODE

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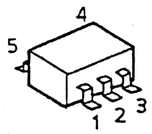
YWSC7S04FER



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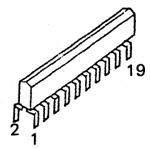

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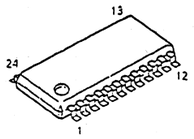

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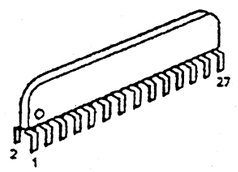

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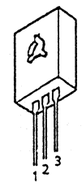

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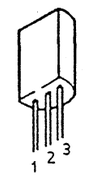

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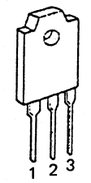

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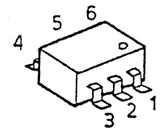

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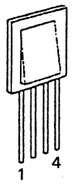

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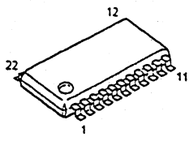

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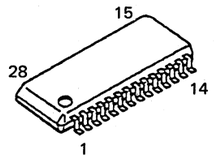

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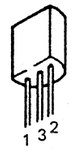

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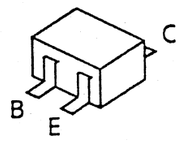

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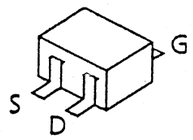

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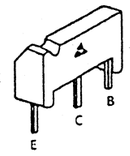

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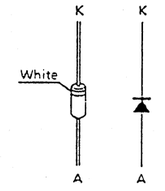

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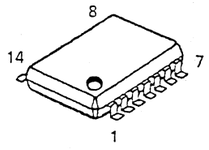

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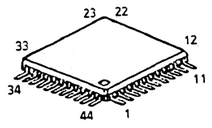

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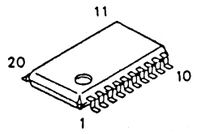

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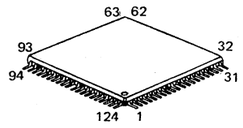

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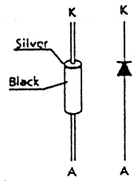

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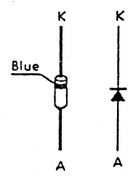

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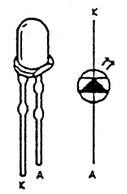

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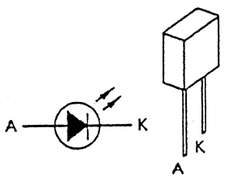

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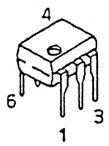

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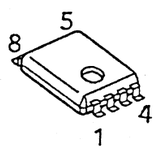

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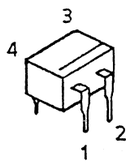

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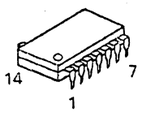

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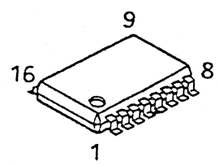

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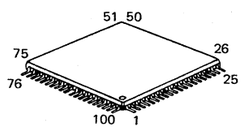

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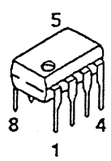

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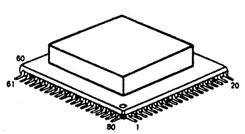


WIRING DIAGRAM

SWITCH BOARD

CN2

30	NOT USED	29	NOT USED
28	MIC	27	MIC GND
26	VR OUT GND	25	VR OUT R
24	VR OUT L	23	VR IN GND
22	VR IN R	21	VR IN L
20	PHONE L	19	PHONE L GND
18	PHONE R	17	PHONE R GND
16	NOT USED	15	NOT USED
14	NOT USED	13	NOT USED
12	REC AUDIO R	11	GND
10	REC AUDIO L	9	GND
8	GND	7	AUX R
6	GND	5	AUX L
4	GND	3	A IN R
2	GND	1	A IN L

CN4

34	KEY 7	33	KEY 6
32	KEY 5	31	KEY 4
30	KEY 3	29	KEY 2
28	KEY 1	27	KEY 0
26	KEY LEVEL	25	AD REF -
24	ART LEVEL	23	STROBE LEVEL
22	FADE SPEED	21	SCROLL SPEED
20	B-Y POS	19	R-Y POS
18	CORT LEVEL	17	BACK LEVEL
16	AD REF +	15	AUDIO FADE
14	AUDIO PULSE	13	SCAN 0
12	SCAN 1	11	SCAN 2
10	SCAN 3	9	SCAN 4
8	LED 0	7	LED 1
6	LED 2	5	LED 3
4	LED 4	3	LED 5
2	LED 6	1	LED 7

CN1

10	NOT USED	9	-12V
8	NOT USED	7	VR GND
6	GND	5	+12V
4	GND	3	ANALOG 5V
2	DIGITAL 5V	1	GND

CN3

5	UPPER
4	LOWER
3	R-Y POS
2	B-Y POS
1	VR GND

POSITIONER BOARD

CN1

5	UPPER
4	LOWER
3	R-Y POS
2	B-Y POS
1	VR GND

REAR BOARD

CN1

15	NOT USED	16	NOT USED
13	NOT USED	14	NOT USED
11	GND	12	REC AUDIO R
9	GND	10	REC AUDIO L
7	AUX R	8	GND
5	AUX L	6	GND
3	A IN R	4	GND
1	A IN L	2	GND

CN2

19	NOT USED	20	NOT USED
17	EXT VIDEO	18	GND
15	GND	16	BIAS 2
13	GND	14	EXT Y
11	BIAS 1	12	VIDEO IN
9	Y IN	10	GND
7	C IN	8	GND
5	REC VIDEO	6	GND
3	REC Y	4	GND
1	REC C	2	GND

MAIN BOARD

CN4

12	MIC
11	MIC GND
10	VR OUT GND
9	VR OUT R
8	VR OUT L
7	VR IN GND
6	VR IN R
5	VR IN L
4	PHONE L
3	PHONE L GND
2	PHONE R
1	PHONE R GND

CN3

7	GND
6	GND
5	+5V
4	GND
3	SYNC
2	GND
1	CHAR IN

CN101
TITLE INPUT
CONNECTOR

CN6

14	NOT USED	13	NOT USED
12	MIC GND	11	MIC
10	VR OUT R	9	VR OUT GND
8	VR IN GND	7	VR OUT L
6	VR IN L	5	VR IN R
4	PHONE L GND	3	PHONE L
2	PHONE R GND	1	PHONE R

CN2

20	NOT USED	19	NOT USED
18	EXT VIDEO	17	GND
16	GND	15	BIAS 2
14	GND	13	EXT Y
12	BIAS 1	11	VIDEO IN
10	Y IN	9	GND
8	C IN	7	GND
6	REC VIDEO	5	GND
4	REC Y	3	GND
2	REC C	1	GND

CN1

34	KEY 6	33	KEY 7
32	KEY 4	31	KEY 5
30	KEY 2	29	KEY 3
28	KEY 0	27	KEY 1
26	AD REF -	25	KEY LEVEL
24	STROBE LEVEL	23	ART LEVEL
22	SCROLL SPEED	21	FADE SPEED
20	R-Y POS	19	B-Y POS
18	BACK LEVEL	17	CORT LEVEL
16	AUDIO FADE	15	AD REF +
14	SCAN 0	13	AUDIO PULSE
12	SCAN 2	11	SCAN 1
10	SCAN 4	9	SCAN 3
8	LED 1	7	LED 0
6	LED 3	5	LED 2
4	LED 5	3	LED 4
2	LED 7	1	LED 6

CN7

10	-12V	9	NOT USED
8	VR GND	7	NOT USED
6	+12V	5	GND
4	ANALOG 5V	3	GND
2	GND	1	DIGITAL 5V

MIC BOARD

E1

1	PHONE R GND
2	PHONE R
3	PHONE L GND
4	PHONE L
5	VR IN L
6	VR IN R
7	VR IN GND
8	VR OUT L
9	VR OUT R
10	VR OUT GND
11	MIC GND
12	MIC

CN5

1	2	3	4	5	6	7	8	9	10	11	
S +5V	GND	D 5V	A 5V	GND	+12V	GND	S +12V	GND	-12V	STANDBY	

POWER BOARD

CN1

1	2	3	4	5	6	7	8	9	10	11	
S +5V	GND	D 5V	A 5V	GND	+12V	GND	S +12V	GND	-12V	STANDBY	

E1
E2

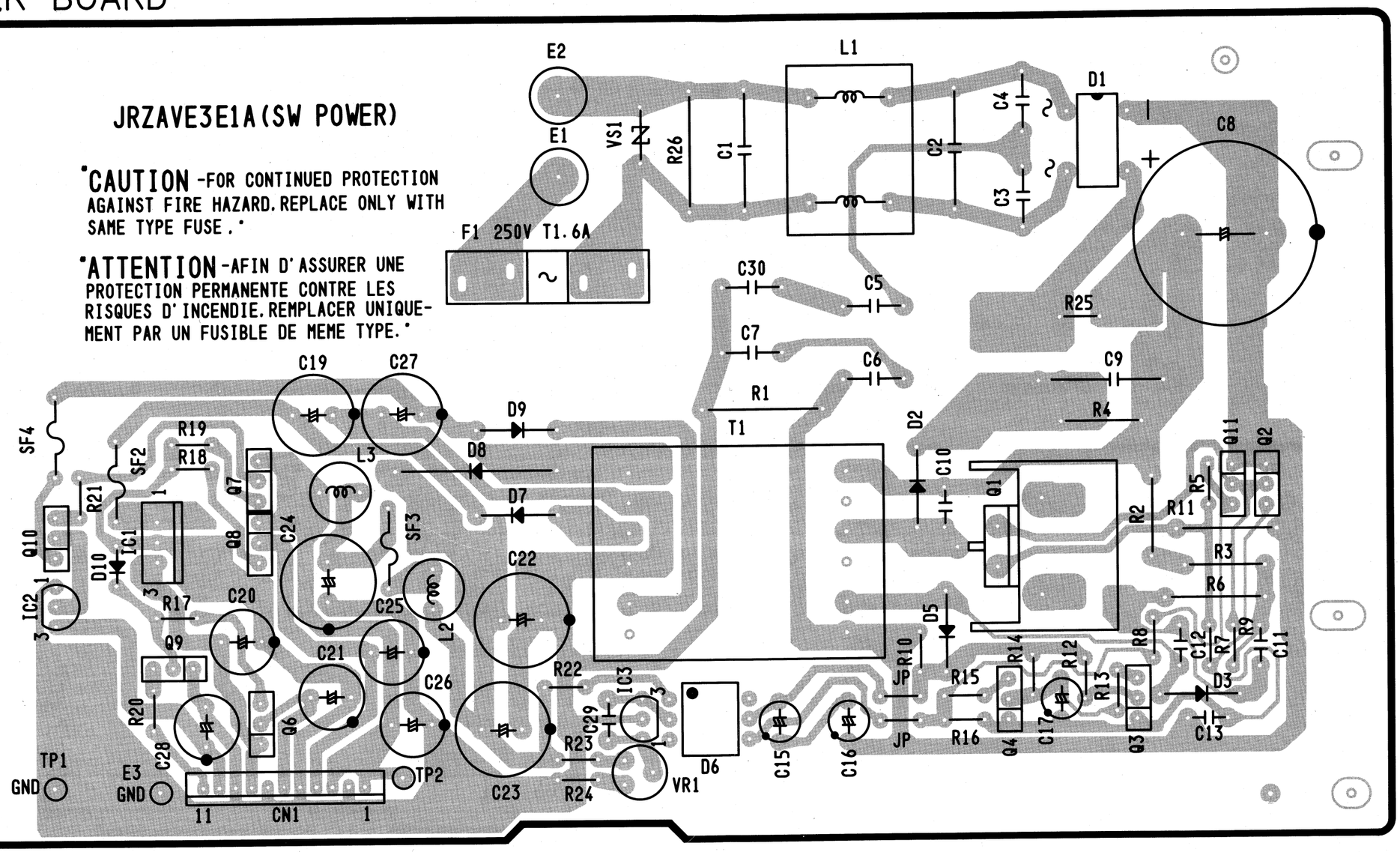
CONDUCTOR VIEW OF POWER BOARD

POWER BOARD

JRZAVE3E1A(SW POWER)

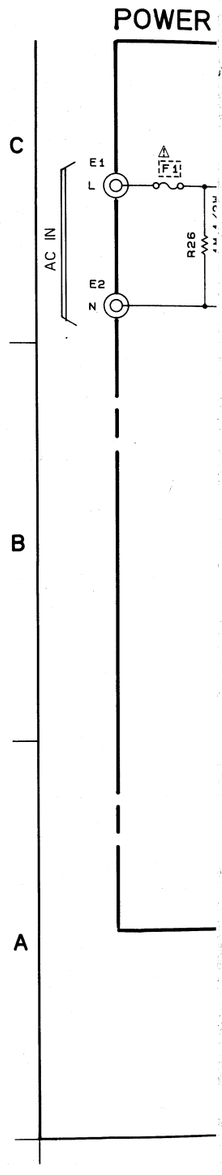
CAUTION -FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACE ONLY WITH SAME TYPE FUSE.

ATTENTION -AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE. REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE.

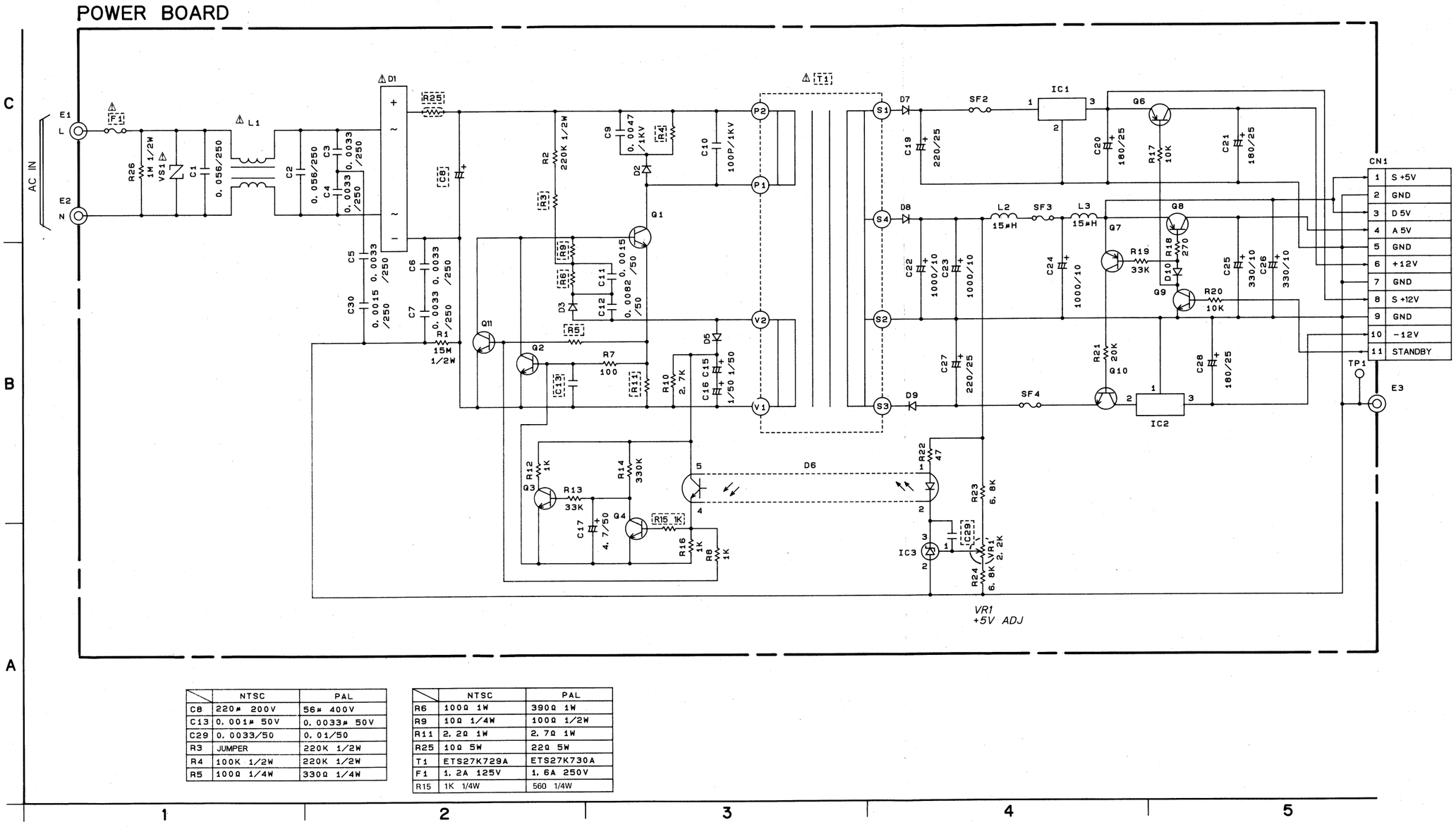


<Address>

IC1	B1
IC2	A1
IC3	A3
Q1	B4
Q2	B5
Q3	A4
Q4	A4
Q6	A2
Q7	B2
Q8	B2
Q9	A1
Q10	B1
Q11	B5
D1	C4
D2	B4
D3	A5
D5	A4
D6	A3
D7	B3
D8	B2
D9	B3
D10	B1



SCHEMATIC DIAGRAM OF POWER BOARD



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IC1	C4
IC2	B5
IC3	A4
Q1	C3
Q2	B2
Q3	B2
Q4	A3
Q6	C5
Q7	B4
Q8	C5
Q9	B5
Q10	B4
Q11	B2
D1	C2
D2	C3
D3	B2
D5	B3
D6	B3
D7	C4
D8	C4
D9	B4
D10	B5

POWER BOARD

	E	C	B
Q1	0	48	0
2	0	0	0.2
3	0.2	2.6	0.2
4	0.2	0.2	0.4
6	11.9	8.5	11.4
7	5.2	-14.0	4.8
8	5.2	5.2	4.8
9	0	11.5	-0.7
10	-15.7	0	-14.0
11			

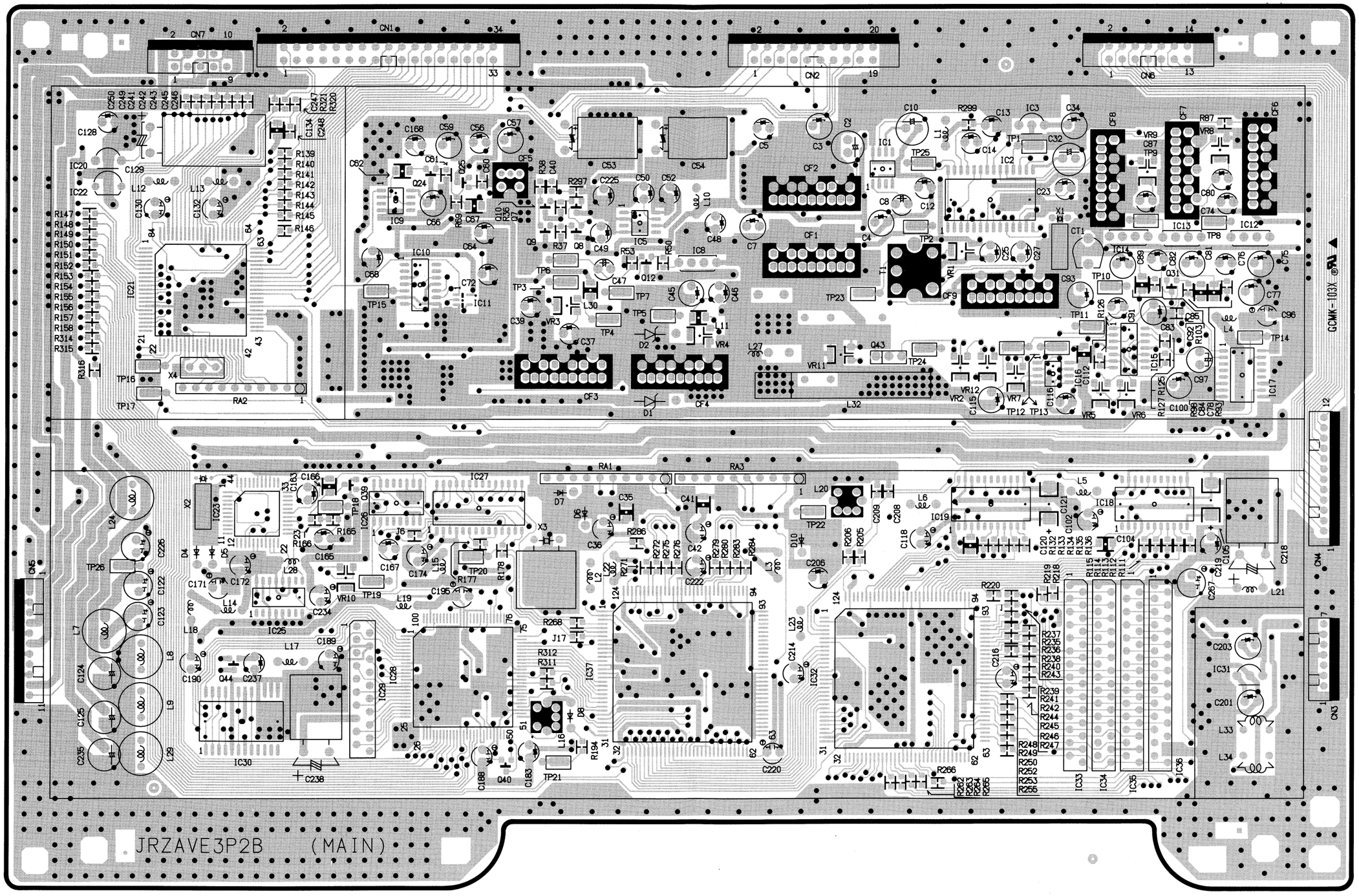
	IC1	IC2	IC3
Pin 1	14.7	0	2.5
2	0	0	0
3	12.0	0	3.9

	NTSC	PAL
C8	220μ 200V	56μ 400V
C13	0.001μ 50V	0.0033μ 50V
C29	0.0033/50	0.01/50
R3	JUMPER	220K 1/2W
R4	100K 1/2W	220K 1/2W
R5	100Ω 1/4W	330Ω 1/4W

	NTSC	PAL
R6	100Ω 1W	390Ω 1W
R9	10Ω 1/4W	100Ω 1/2W
R11	2.2Ω 1W	2.7Ω 1W
R25	10Ω 5W	22Ω 5W
T1	ETS27K729A	ETS27K730A
F1	1.2A 125V	1.6A 250V
R15	1K 1/4W	560 1/4W

MAIN BOARD

(COMPONENT SIDE VIEW)



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<Component Side>

IC1	D4
IC2	C4
IC3	D5
IC5	C3
IC8	C3
IC9	C2
IC10	C2
IC11	C2
IC12	C6
IC13	C5
C14	C5
IC15	C5
IC16	C5
C17	C5
IC18	B5
IC19	B4
IC20	D1
IC21	C1
IC22	C1
IC23	B2
IC25	B2
IC26	B2
IC27	B3
IC28	B2
C29	A2
IC30	A2
IC31	B5
IC32	B4
IC33	A5
IC34	A5
IC35	A5
IC36	A5
IC37	B3
Q7	C3
Q8	C3
Q9	C3
Q10	C3
Q12	C3
Q24	C2
Q25	C2
Q31	C5
Q39	B2
Q40	A3
Q43	C4
Q44	B2
D1	C3
D2	C3
D4	B1
D5	B1
D6	B3
D7	B3
D8	A3
D10	B4

CTOR VIEW OF MAIN BOARD

MAIN BOARD

(PATTERN SIDE VIEW)

<Address>

<Component Side>

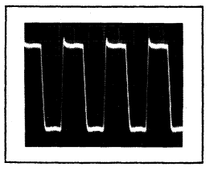
C1	D4
C2	C4
C3	D5
C5	C3
C8	C3
C9	C2
C10	C2
C11	C2
C12	C6
C13	C5
C14	C5
C15	C5
C16	C5
C17	C5
C18	B5
C19	B4
C20	D1
C21	C1
C22	C1
C23	B2
C25	B2
C26	B2
C27	B3
C28	B2
C29	A2
C30	A2
C31	B5
C32	B4
C33	A5
C34	A5
C35	A5
C36	A5
C37	B3
Q7	C3
Q8	C3
Q9	C3
Q10	C3
Q12	C3
Q24	C2
Q25	C2
Q31	C5
Q39	B2
Q40	A3
Q43	C4
Q44	B2
D1	C3
D2	C3
D4	B1
D5	B1
D6	B3
D7	B3
D8	A3
D10	B4

<Address>

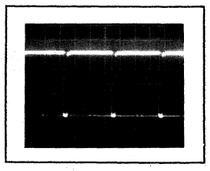
<Pattern Side>

IC4	B3
IC6	B3
IC7	C4
IC24	B5
IC38	B4
IC40	A1
IC41	B3
IC42	B3
IC43	B3
Q1	D3
Q2	C3
Q3	D3
Q4	C3
Q5	C3
Q6	C4
Q11	C4
Q13	C3
Q14	C3
Q15	D4
Q16	D4
Q17	D4
Q18	D4
Q19	D3
Q20	D3
Q21	D3
Q22	D3
Q23	C4
Q26	C4
Q27	C4
Q28	C4
Q29	C4
Q30	C1
Q32	C2
Q33	C2
Q34	C1
Q35	C1
Q36	C1
Q37	D6
Q38	B5
Q41	B3
Q42	B1
Q45	C4
D3	C3
D11	C4
D12	D4
D13	D4

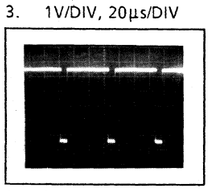
1. 0.1V/DIV, 0.1µs/DIV



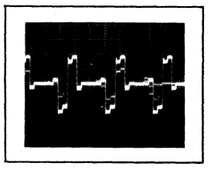
2. 1V/DIV, 20µs/DIV



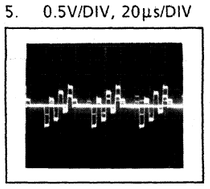
3. 1V/DIV, 20µs/DIV



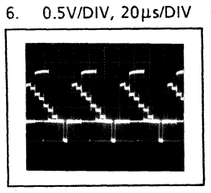
4. 0.5V/DIV, 20µs/DIV



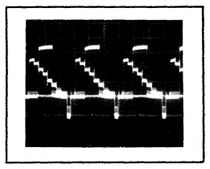
5. 0.5V/DIV, 20µs/DIV



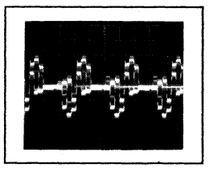
6. 0.5V/DIV, 20µs/DIV



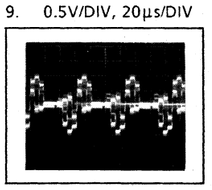
7. 0.5V/DIV, 20µs/DIV



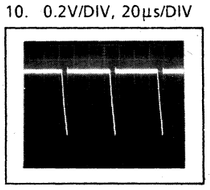
8. 0.5V/DIV, 20µs/DIV



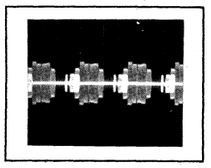
9. 0.5V/DIV, 20µs/DIV



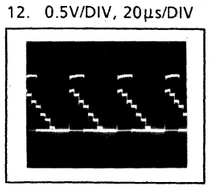
10. 0.2V/DIV, 20µs/DIV



11. 0.5V/DIV, 20µs/DIV



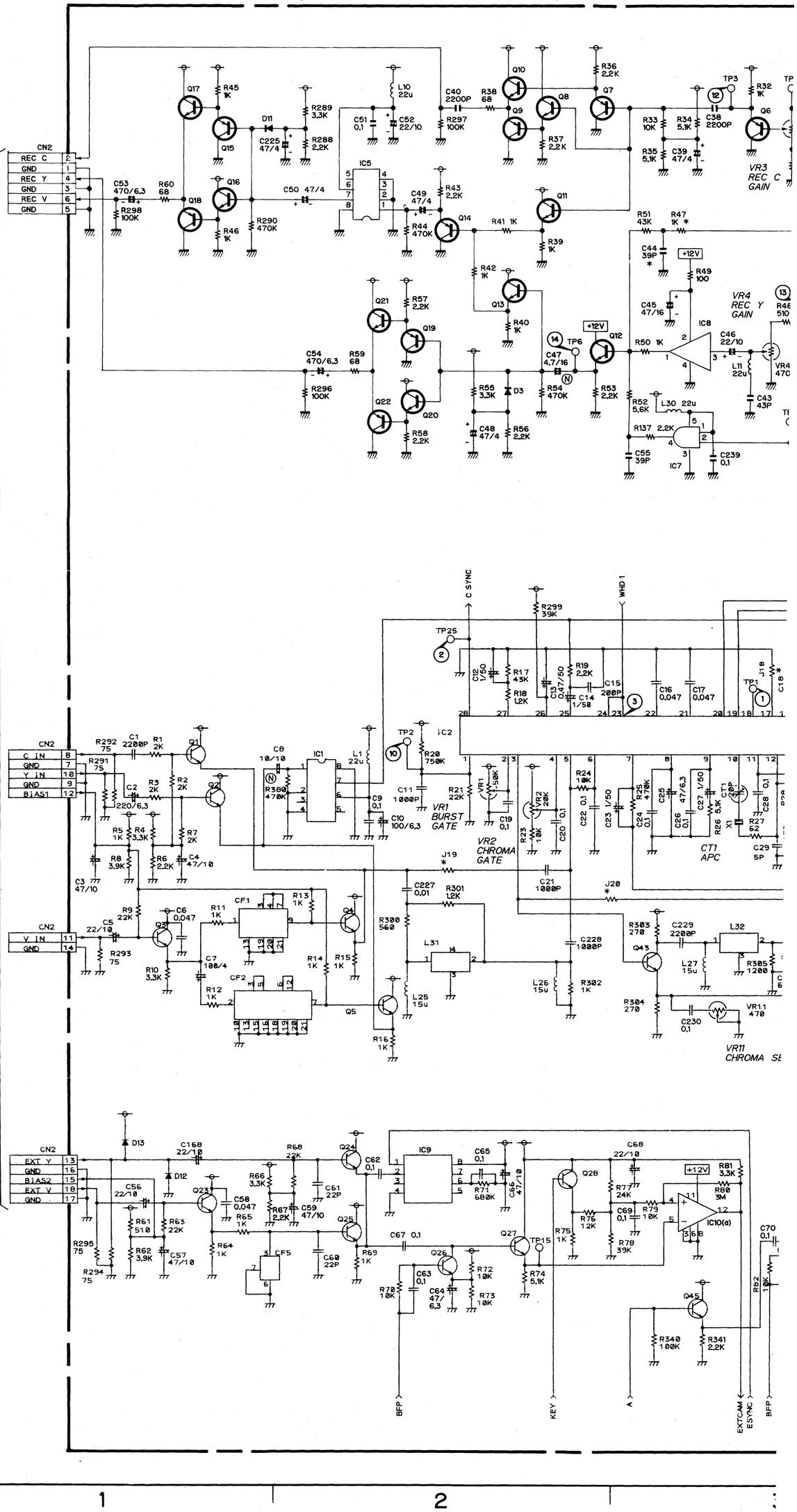
12. 0.5V/DIV, 20µs/DIV



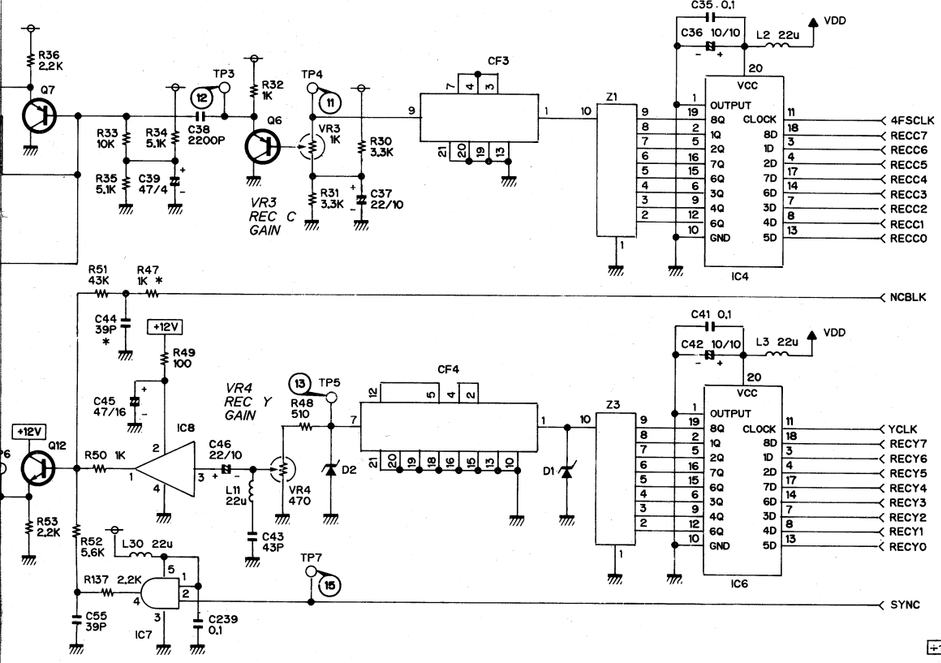
<Address>

IC1	C2
IC2	C2
IC3	C3
IC4	D4
IC5	D2
IC6	D4
IC7	D3
IC8	D3
IC9	A2
IC10	A3,A4
IC11	A4
IC12	C4
IC13	C4
IC14	C4
IC15	B4
IC16	B4
IC17	C5
IC18	C5
IC19	B5
Q1	C1
Q2	C1
Q3	B1
Q4	B2
Q5	B2
Q6	E3
Q7	E2
Q8	E2
Q9	E2
Q10	E2
Q11	D2
Q12	D2
Q13	D2
Q14	D2
Q15	E1
Q16	D1
Q17	E1
Q18	D1
Q19	D2
Q20	D2
Q21	D2
Q22	D2
Q23	A1
Q24	A2
Q25	A2
Q26	A2
Q27	A2
Q28	A2
Q29	A3
Q30	C5
Q31	C5
Q32	C5
Q33	B5
Q34	C5
Q35	C5
Q36	C6
Q45	A3
D1	D4
D2	D3
D3	D2
D11	E1
D12	A1
D13	B1

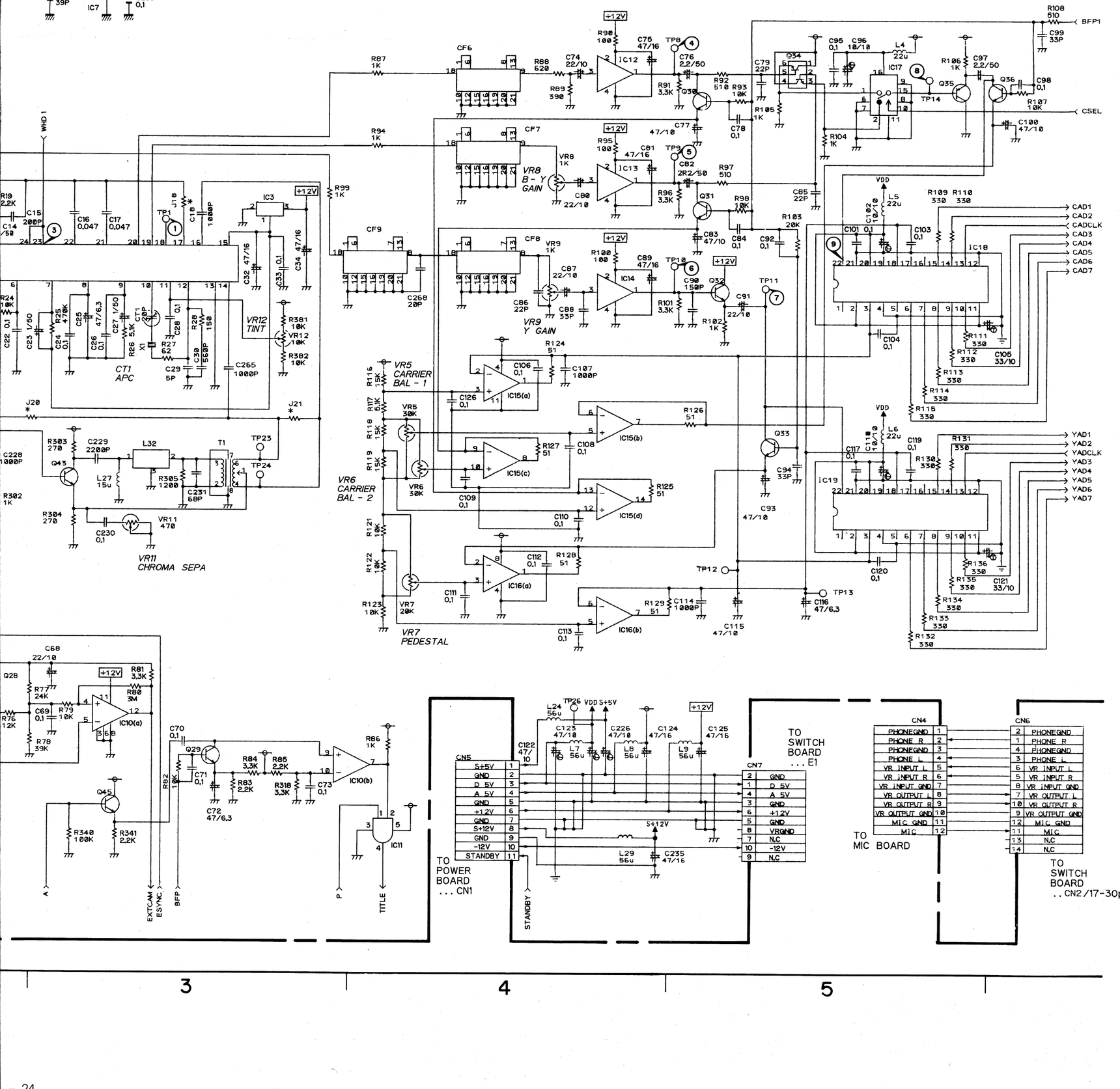
MAIN BOARD (1/2)



C DIAGRAM OF MAIN BOARD (1/2)



	NTSC	PAL
J18	—	USED
J19	—	USED
J20	USED	—
J21	USED	—
Q43	—	USED
R47	USED	—
R300	USED	—
R301	USED	—
R302	USED	—
R303	—	USED
R304	—	USED
R305	—	USED
C21	—	USED
C44	USED	—
C227	USED	—
C228	USED	—
C229	—	USED
C230	—	USED
C231	—	USED
L25	USED	—
L26	USED	—
L27	—	USED
VR11	—	USED
T1	—	USED
DL31	USED	—
DL32	—	USED
TP23	—	USED
TP24	—	USED



3 4 5

MAIN BOARD (2/2)

	NTSC	PAL
J1	USED	—
J2	—	USED
J3	USED	—
J4	USED	—
J5	—	USED
J6	—	USED
J7	—	—
J8	USED	—
J9	USED	—
J10	USED	—
J11	USED	—
J12	USED	—
J13	—	USED
J14	—	USED
J15	—	USED
J16	—	USED
J17	—	USED
J22	USED	—

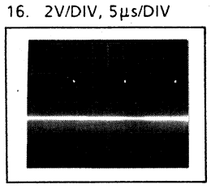
	NTSC	PAL
IC38	—	USED
R162	—	USED
R163	—	USED
R164	—	USED
R180	—	USED
R181	—	USED
R182	—	USED
R183	—	USED
C163	—	USED
C164	—	USED
C178	—	USED
C179	—	USED
C180	—	USED
D6	—	USED
D7	—	USED
X3	—	USED
Q38	—	USED
R179	—	USED

TO SWITCH BOARD ...CN4

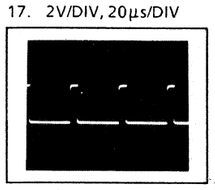
TO SWITCH BOARD ...CN4

ANALOG PART

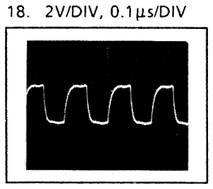
16. 2V/DIV, 5μs/DIV



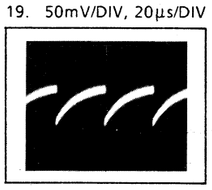
17. 2V/DIV, 20μs/DIV



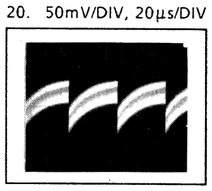
18. 2V/DIV, 0.1μs/DIV



19. 50mV/DIV, 20μs/DIV



20. 50mV/DIV, 20μs/DIV

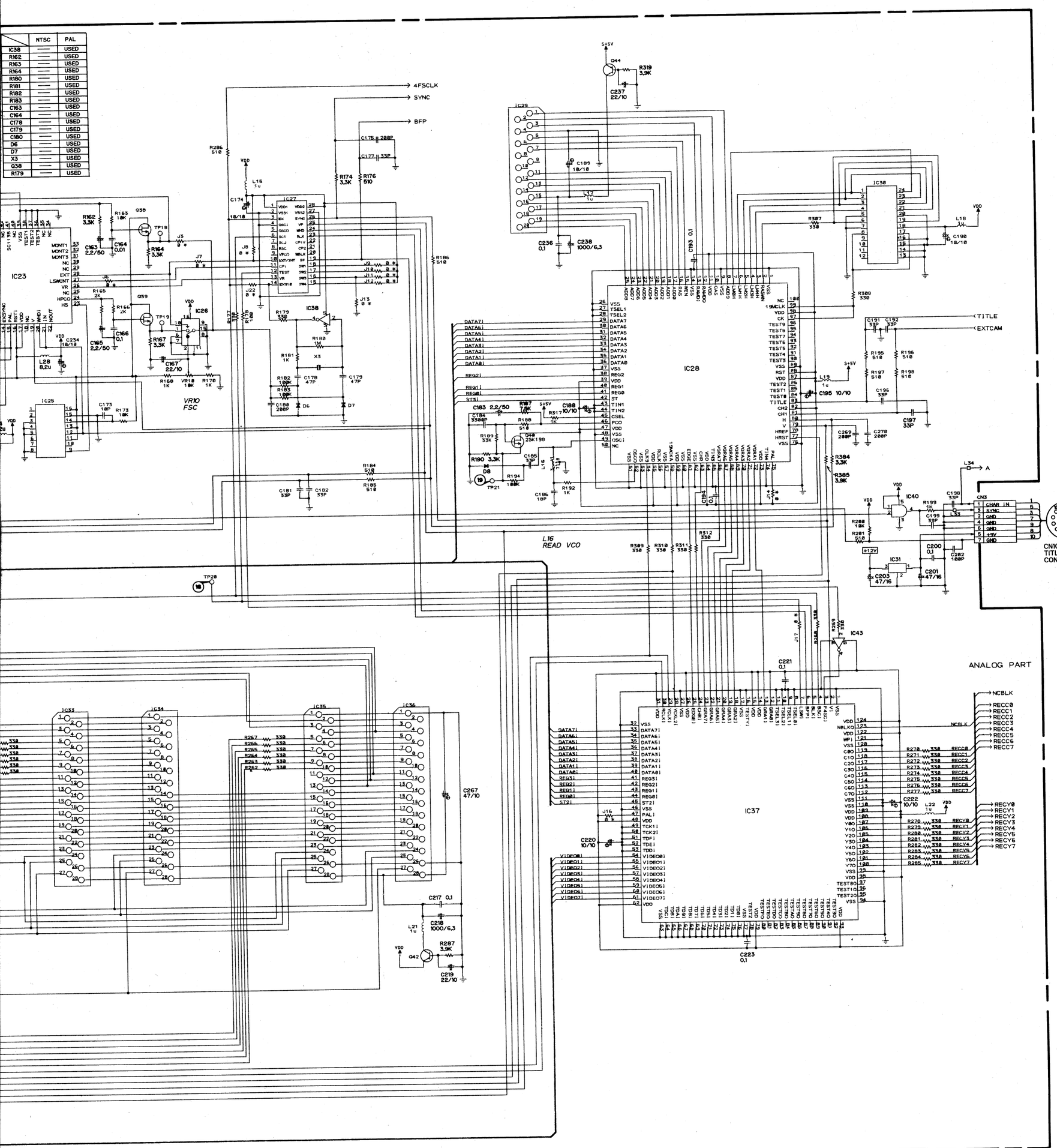


<Address>

IC20	E2	IC25	A4	IC33	
IC21	D2	IC26	D5	IC34	
IC22	D1	IC27	D5	IC35	
IC23	D4	IC28	D7	IC36	
IC24	D4	IC29	E6	IC37	
		IC30	D8	IC40	
		IC31	C8	IC41	
		IC32	B3	IC42	

C DIAGRAM OF MAIN BOARD (2/2)

	NTSC	PAL
IC38	—	USED
R162	—	USED
R163	—	USED
R164	—	USED
R180	—	USED
R181	—	USED
R182	—	USED
R183	—	USED
C163	—	USED
C164	—	USED
C178	—	USED
C179	—	USED
C180	—	USED
D6	—	USED
D7	—	USED
X3	—	USED
Q38	—	USED
R179	—	USED



IC25	A4	IC33	B4	IC43	C7	D4	D4
IC26	D5	IC34	B5	Q37	E2	D5	D4
IC27	D5	IC35	B5	Q39	D5	D8	C6
IC28	D7	IC36	B6	Q40	D6	D10	C2
IC29	E6	IC37	B7	Q41	C2		
IC30	D8	IC40	C8	Q42	A6		
IC31	C8	IC41	C2	Q44	E6		

4 5 6 7 8

MAIN BOARD

	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10	IC11	IC12	IC13
Pin 1	0	0.2	4.9	0	2.3	0	0.6	6.6	0	0	4.0	6.5	6.6
2	0	2.7	11.8	2.1	0	0	1.3	11.2	1.5	0	0.3	11.1	11.1
3	2.3	2.2	0	1.9	2.4	0	0	2.6	0	0	0	2.5	2.5
4	0	2.4		1.9	0	0	0.3	0	0	1.9	0	0	0
5	2.5	2.9		2.0	2.4	0	0.6		5.0	1.9	5.0		
6	5.0	2.9		2.0	5.0	0			1.3	0			
7	0	4.6		2.0	2.0	0			0	0.3			
8	0	0		2.5	0	0			5.1	0			
9		2.8		2.7		0				1.4			
10		2.8		0		0				3.0			
11		2.4		2.4		2.4				11.8			
12		3.2		2.1		0				0.2			
13		0		2.0		0				0			
14		2.8		1.4		0				0			
15		4.9		2.0		0							
16		2.8		2.0		0							
17		0.8		1.9		0							
18		4.0		3.0		0							
19		2.0		3.2		0							
20		2.0		5.1		5.1							
21		0											
22		2.7											
23		4.4											
24		4.4											
25		2.8											
26		2.4											
27		2.4											
28		0.1											

	IC14	IC15	IC16	IC17	IC18	IC19	IC20	IC22	IC23	IC25	IC26	IC27	IC29
Pin 1	6.4	4.0	1.4	2.0	0	0	5.0	5.0	2.5	0	1.0	5.1	2.1
2	11.1	3.6	1.4	2.0	5.0	5.0	11.8	5.0	0	0.3	2.0	0	-
3	2.6	0	1.4	0.4	3.6	3.6	0	0	-0.3	0	0.3	2.3	-11.1
4	0	5.0	0	0.3	0	0			0	0	0.3	0	0
5		2.5	1.5	0.3	0	0			0	0	0.2	5.1	0
6		2.5	1.5	0	0.3	0			-23.3	0	0	2.5	5.1
7		2.5	1.2	0	-2.4	0			0	5.0	0	2.5	-5.2
8		2.6	5.0	0	-2.7	0			1.9	0	0	5.0	0
9		2.6		0	-2.7	0			4.9	5.0	0	0	0
10		2.6		2.4	-2.4	0			2.9	0	0	5.1	0
11		0		0	5.0	5.0			0	5.0	0	0.1	-9.5
12		2.6		0.3	0	0			0	0.8	0	5.1	-22.3
13		2.6		0.4	2.4	2.8			0	5.0	2.5	5.1	-12.2
14		2.6		0.3	1.2	0			0	5.0	2.6	0	3.3
15				2.0	-2.3	0			0	0	2.5	5.1	0
16				5.0	0	5.0			5.1	5.0	2.0	5.1	0.2
17					0	0.1			5.1		5.0	5.1	1.2
18					1.5	1.5			0			5.1	1.9
19					0	0			0.1			0.2	2.3
20					5.0	5.0			0			3.4	2.4
21					0	0			0.8			0.2	
22					2.5	1.5			0.7			0.1	
23									5.0			1.2	
24									0.7			0.8	
25									0			0	
26									5.0			4.6	
27									0			0	
28									0			5.1	
29									0				
30									0				
31									5.0				
32									0				
33									4.9				
34									0				
35									0				
36									0				
37									0				
38									0				
39									0				
40									0				
41									4.9				
42									0				
43									0				
44									2.4				

	B	C	E
Q1	0.2	0.3	0
2	0.2	0.6	0
3	0.5	0.6	0
4	0.5	0.6	0
5	0.5	0.6	0
6	0.3	0	0.4
7	2.4	0	3.1
8	2.4	5.1	1.8
9	1.8	0	2.4
10	3.0	5.1	2.4
11	0.3	0	0
12	6.3	1.8	5.8
13	0.3	0.6	0
14	0	0	0
15	0	0	0.3
16	0	0.6	0
17	0.6	0	0.4
18	0	0	0.4
19	0.3	0	0.6
20	0	0.6	0
21	0.6	0.6	0.4
22	0	0	0.4
23	0.5	0.6	0
24	2.0	5.1	2.9
25			
26	-0.3	0.5	0.5
27	0.1	0.6	0
28	0	0	0
29	-0.5	0	0
30	-0.3	1.0	1.2

	B	C	E
Q31	0.1	2.6	2.6
32	0	0.5	0.1
33	0.2	1.1	1.2
35	0.4	0	0
36	-0.3	1.1	1.2
37	11.2	0	0
39	0.4	0	5.1
40	2.4	2.2	0.1
41	4.9	4.8	0
42	4.3	0	0
44	4.3	5.0	5.1
51	0	5.1	2.9

	Q34
Pin 1	0.4
2	1.0
3	0.6
4	0.4
5	1.0
6	0.6

MAIN BOARD

	IC30	IC31	IC33	IC34	IC35	IC36	IC42	IC43	IC40	IC41
Pin 1	0	8.9	0	0	0	0	0	0	5.1	0.6
2	0	0.1	0	0	0	0	2.6	2.3	4.4	0.5
3	0	0	0	0	0	0	0	0	0	0
4	0		0	0	1.1	0.9	2.6	3.0	4.7	0
5	0		0	0	0	0	5.1	5.1	5.1	5.1
6	4.3		0	0.1	0	0				
7	0		0	0	-8.2	-8.2				
8	2.7		0	0	0	0.8				
9	0		0	0	2.8	2.7				
10	0		0	0	15.5	16.2				
11	0		0	0	2.1	2.1				
12	0		0	0	0.4	0.				
13	0		0	0	2.5	2.5				
14	0		0.2	0.2	0.2	0.2				
15	0		0.2	0.2	0.2	0.2				
16	0		0.3	0.3	0.3	0.3				
17	2.7		0.2	0.2	0.2	0.2				
18	5.1		0.3	0.3	0.3	0.3				
19	4.3		0.1	0.1	0.1	0.1				
20	0		0.2	0	0	0.2				
21	0		0.2	0.2	0.2	0.2				
22	0		4.8	4.8	4.8	4.8				
23	0		4.8	4.8	4.8	4.8				
24	0		1.0	0.9	0.6	0.9				
25			1.0	1.0	1.0	1.0				
26			0	0	0	0				
27			4.1	4.1	4.1	4.1				
28			5.0	4.9	5.0	5.0				

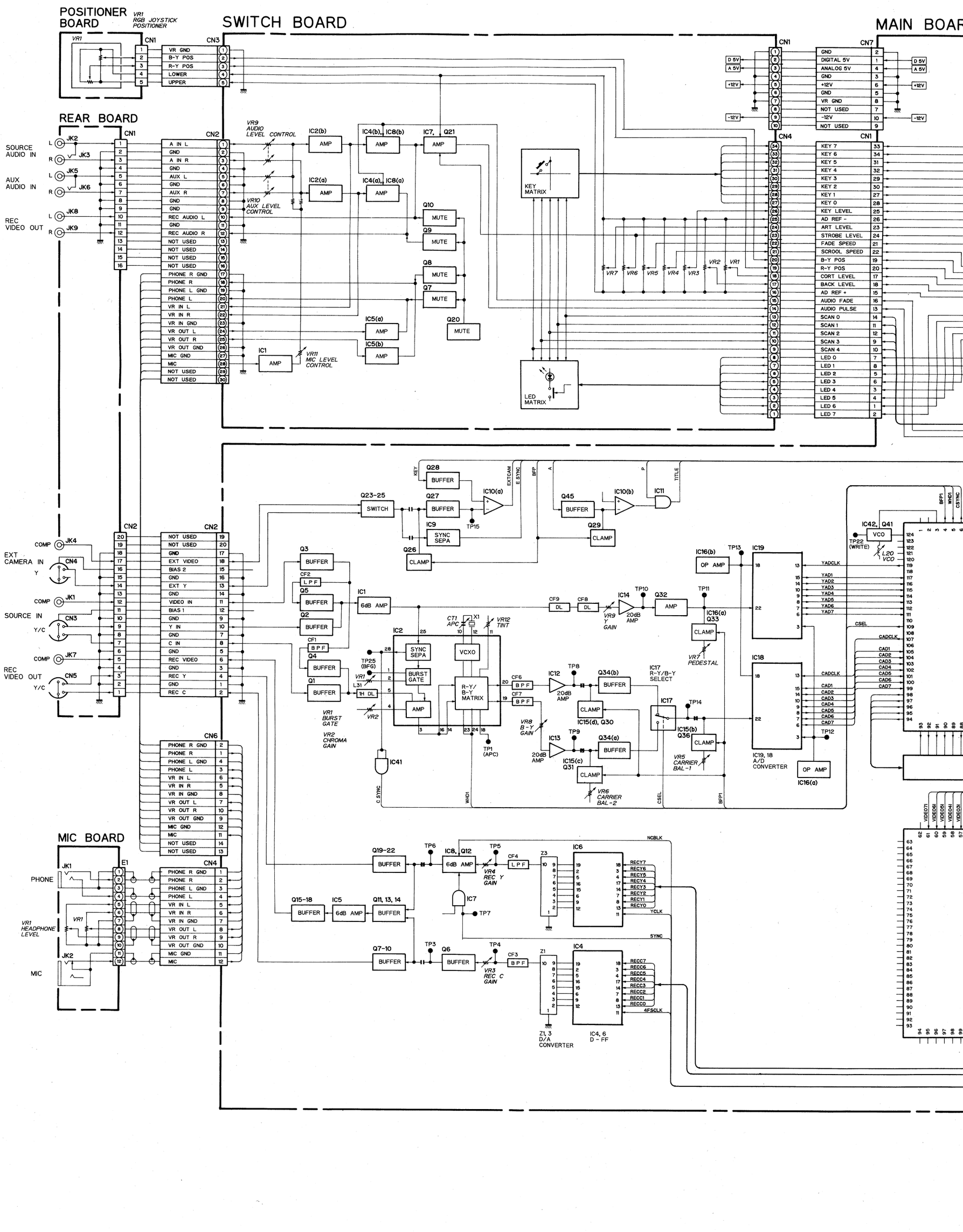
			IC37		
Pin 1	0	Pin 51	0	Pin 101	0
2	0	52	0	102	0
3	2.8	53	0	103	0
4	0	54	0	104	0
5	0	55	0	105	0
6	0	56	0.6	106	0
7	0	57	0.5	107	0
8	0	58	0.5	108	5.1
9	0	59	0.4	109	5.1
10	0	60	0	110	0
11	0	61	1.7	111	0
12	0	62	5.1	112	4.6
13	0	63	0	113	0.4
14	5.1	64	0	114	0.2
15	5.1	65	0	115	0.4
16	0	66	0	116	0.4
17	0	67	0	117	0.4
18	2.5	68	0	118	2.5
19	2.5	69	0	119	0.1
20	2.5	70	0	120	0
21	-	71	0	121	0
22	-	72	0	122	5.1
23	-	73	0	123	3.7
24	0	74	0	124	5.1
25	0	75	0		
26	5.1	76	0		
27	0	77	0		
28	2.5	78	0		
29	2.5	79	5.1		
30	2.6	80	2.1		
31	5.1	81	2.1		
32	0	82	2.1		
33	0	83	2.1		
34	0	84	1.9		
35	0	85	0.2		
36	0	86	1.9		
37	0	87	1.9		
38	0	88	1.9		
39	0	89	1.9		
40	0	90	1.9		
41	0	91	1.9		
42	5.0	92	1.9		
43	0	93	0.2		
44	0	94	0		
45	0	95	2.2		
46	0	96	2.3		
47	0.1	97	2.3		
48	5.1	98	5.1		
49	0	99	0		
50	0	100	0		

	IC21		
Pin 1	0	Pin 51	0.1
2	0.8	52	0
3	-	53	0
4	-	54	0
5	-	55	0
6	-	56	0
7	0	57	0
8	0	58	0
9	0	59	0
10	0	60	0
11	0	61	1.5
12	0	62	1.5
13	0	63	0
14	0	64	3.6
15	0	65	0
16	5.0	66	1.4
17	0	67	2.1
18	5.0	68	1.4
19	0	69	3.6
20	0	70	1.5
21	0	71	3.6
22	0	72	5.1
23	0.1	73	5.1
24	0	74	3.3
25	0	75	0
26	0	76	0
27	0	77	0
28	0	78	0
29	0	79	-
30	0.7	80	0
31	-	81	0
32	-	82	0
33	0	83	0.1
34	0	84	
35	0.7		
36	4.2		
37	5.0		
38	5.0		
39	5.0		
40	5.0		
41	5.0		
42	5.0		
43	5.0		
44	0		
45	0		
46	0		
47	0		
48	1.5		
49	5.1		
50	0		

	IC28		
Pin 1	0	Pin 51	0
2	4.3	52	0
3	0	53	0
4	0	54	2.5
5	0	55	5.1
6	0	56	2.6
7	0	57	0
8	2.1	58	3.9
9	0	59	5.1
10	3.8	60	0
11	5.1	61	0
12	0	62	0
13	2.3	63	0
14	0	64	5.1
15	5.1	65	0
16	0.4	66	-
17	2.5	67	-
18	2.5	68	2.6
19	2.6	69	2.5
20	2.5	70	2.5
21	2.5	71	2.5
22	2.5	72	2.5
23	2.5	73	5.1
24	2.5	74	0
25	2.4	75	0
26	0	76	0
27	0	77	5.1
28	0	78	0.1
29	0	79	0
30	0	80	0.8
31	0	81	0.2
32	0	82	5.1
33	0	83	0
34	0	84	0
35	0	85	2.5
36	0	86	2.5
37	0	87	5.1
38	4.9	88	0
39	5.1	89	2.5
40	0	90	2.5
41	0	91	-
42	0	92	-
43	0	93	-
44	0	94	-
45	0	95	-
46	2.1	96	-
47	5.1	97	3.5
48	0	98	5.1
49	2.5	99	3.5
50	0	100	0

			IC32		
Pin 1	2.7	Pin 51	0	Pin 101	1.0
2	0	52	0	102	0.2
3	4.8	53	0	103	0.2
4	0.2	54	0	104	0.1
5	4.3	55	0	105	0.8
6	0	56	0	106	0
7	0	57	0	107	0.2
8	0.1	58	5.1	108	5.1
9	0.1	59	5.1	109	2.5
10	4.9	60	5.1	110	0.3
11	0	61	5.1	111	0
12	0	62	4.1	112	0
13	0	63	4.1	113	0.3
14	0	64	4.1	114	0.3
15	5.1	65	1.0	115	0
16	0	66	1.0	116	0
17	0	67	1.0	117	0
18	0	68	0	118	0
19	0	69	5.1	119	2.7
20	0	70	1.0	120	5.1
21	0	71	1.0	121	0
22	0	72	1.0	122	0
23	0	73	4.8	123	5.1
24	0	74	4.8	124	2.7
25	0.8	75	0.1		
26	5.0	76	0.1		
27	2.6	77	0		
28	-21.5	78	0		
29	-28.8	79	5.1		
30	0	80	0.1		
31	5.0	81	0.1		
32	5.1	82	0.2		
33	0	83	0.1		
34	1.9	84	0.2		
35	0.3	85	0		
36	0.3	86	0.1		
37	0.3	87	2.5		
38	0.4	88	0.1		
39	0.5	89	0.1		
40	0	90	0.9		
41	0	91	0		
42	1.8	92	0		
43	0.3	93	0		
44	0	94	0		
45	0.6	95	0		
46	0	96	0		
47	0	97	0		
48	5.1	98	0		
49	0	99	4.9		
50	0	100	0.1		

BLOCK DIAGRAM



LOCK DIAGRAM

MAIN BOARD

CN1 / CN7
GND
DIGITAL 5V
ANALOG 5V
GND
+12V
GND
VR GND
NOT USED
-12V
NOT USED
D 5V
A 5V
+12V
-12V

CN4 / CN1
KEY 7
KEY 6
KEY 5
KEY 4
KEY 3
KEY 2
KEY 1
KEY 0
KEY LEVEL
AD REF -
ART LEVEL
STROBE LEVEL
FADE SPEED
SCROOL SPEED
B-Y POS
R-Y POS
CORT LEVEL
BACK LEVEL
AD REF +
AUDIO FADE
AUDIO PULSE
SCAN 0
SCAN 1
SCAN 2
SCAN 3
SCAN 4
LED 0
LED 1
LED 2
LED 3
LED 4
LED 5
LED 6
LED 7

CN5
S 5V
GND
D 5V
A 5V
GND
+12V
GND
S +12V
GND
-12V
STANDBY
TP26 (+5V)
TO POWER BOARD ... CN1

IC21 MICROPROCESSOR
Z2
X4
TP17
TP16
IC22
KEY

CN3
GND
GND
+9V
GND
SYNC
GND
CHAR IN
IC31 +9V REG
IC40
CN101 TITLE INPUT CONNECTOR
From WJ-TTL5

IC42, Q41 VCO
TP22 (WRITE)
L20 VCO
YADCLK
YAD1
YAD2
YAD3
YAD4
YAD5
YAD6
YAD7
CSEL
CADCLK
CAD1
CAD2
CAD3
CAD4
CAD5
CAD6
CAD7
TP12
IC16(a) OP AMP

IC32 MOSAIC/STILL/STROBE/ SQUEEZE/PAINT

IC33-36, Q42 MEMORY

IC37 BACK COLOR/ART/SUPERIMPOSE/ COLOR CORRECT/NEGA/FADE

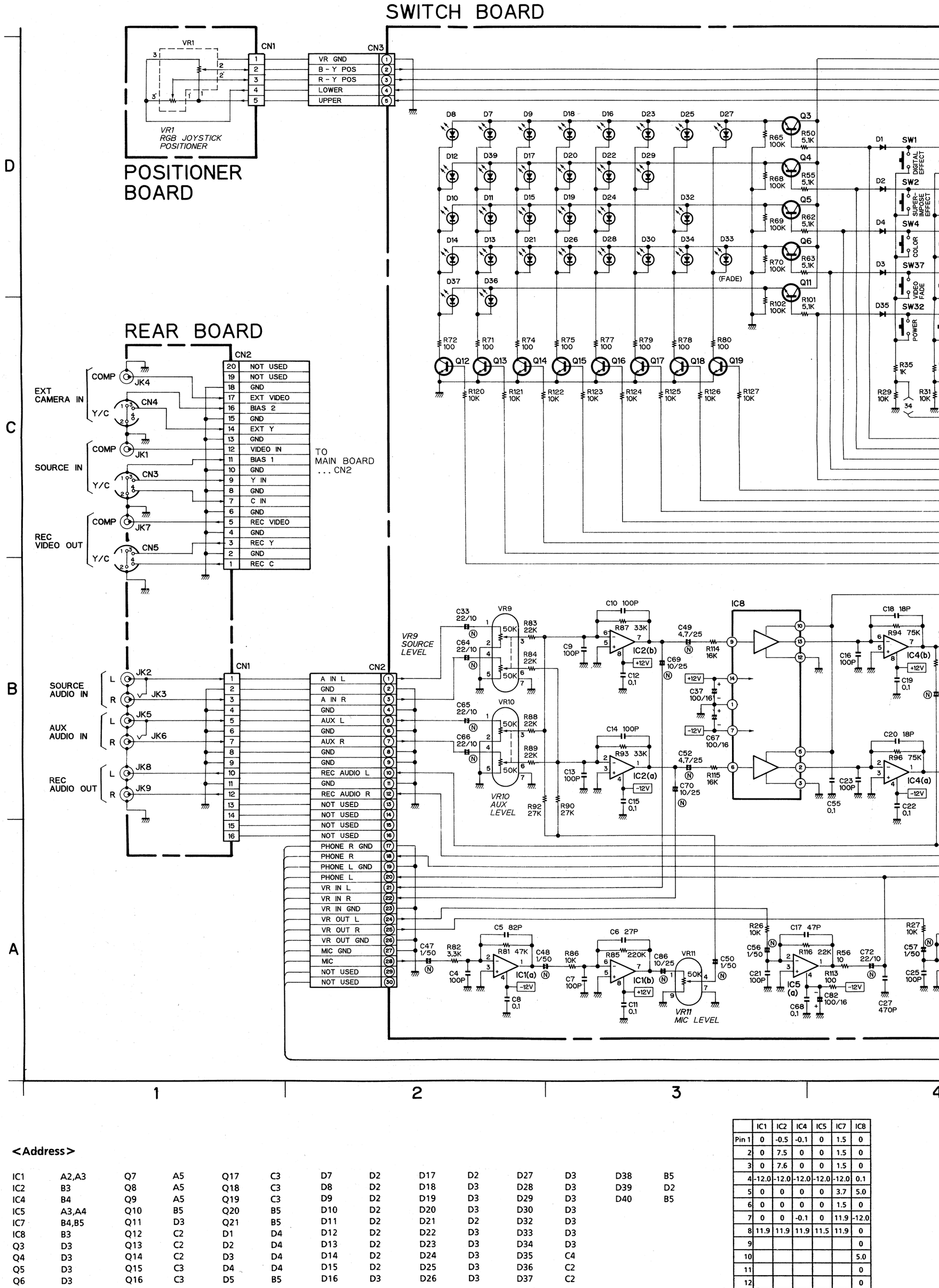
IC27 SYNC GENE-RATOR
IC25 SUB CARRIER
IC24
IC23 EXTERNAL SYNC GENERATOR
Q39 4 FSC
VR10 FSC
IC26
TP19
X2

TP21 (READ VCO)
L10 VCO
Q40 19MHz OSC

IC28 TITLE/SCROLL/H
IC29, Q44 D-RAM
IC30 LINE MEMORY
IC43
TP20 (FSC)

BFP
E SYNC
EXTCAM
TITLE
YCLK
4FSCLK
SYNC
NCBLK

SCHEMATIC DIAGRAM OF SWITCH B

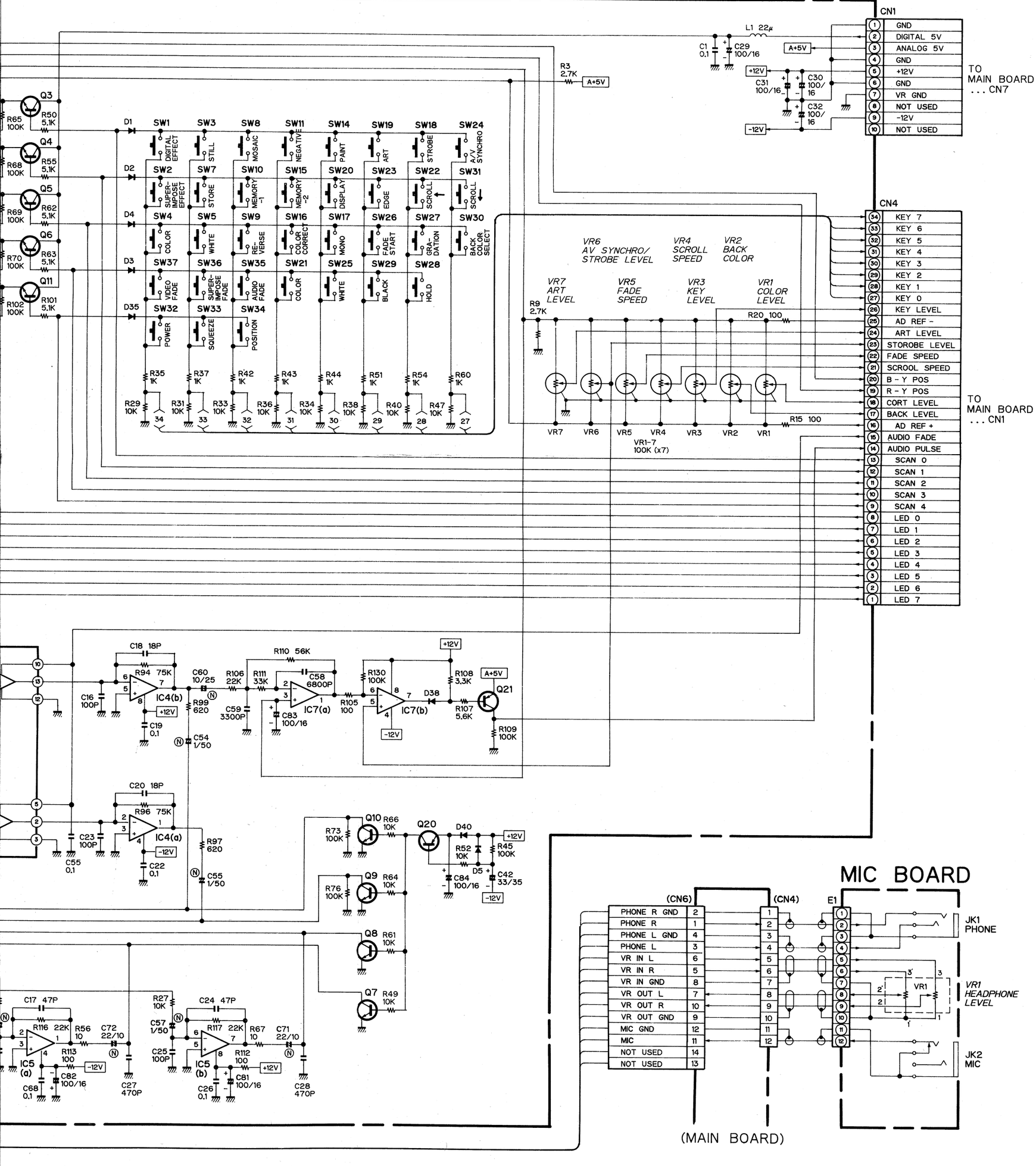


<Address>

IC1	A2,A3	Q7	A5	Q17	C3	D7	D2	D17	D2	D27	D3	D38	B5
IC2	B3	Q8	A5	Q18	C3	D8	D2	D18	D3	D28	D3	D39	D2
IC4	B4	Q9	A5	Q19	C3	D9	D2	D19	D3	D29	D3	D40	B5
IC5	A3,A4	Q10	B5	Q20	B5	D10	D2	D20	D3	D30	D3		
IC7	B4,B5	Q11	D3	Q21	B5	D11	D2	D21	D2	D32	D3		
IC8	B3	Q12	C2	D1	D4	D12	D2	D22	D3	D33	D3		
Q3	D3	Q13	C2	D2	D4	D13	D2	D23	D3	D34	D3		
Q4	D3	Q14	C2	D3	D4	D14	D2	D24	D3	D35	C4		
Q5	D3	Q15	C3	D4	D4	D15	D2	D25	D3	D36	C2		
Q6	D3	Q16	C3	D5	B5	D16	D3	D26	D3	D37	C2		

	IC1	IC2	IC4	IC5	IC7	IC8
Pin 1	0	-0.5	-0.1	0	1.5	0
2	0	7.5	0	0	1.5	0
3	0	7.6	0	0	1.5	0
4	-12.0	-12.0	-12.0	-12.0	-12.0	0.1
5	0	0	0	0	3.7	5.0
6	0	0	0	0	1.5	0
7	0	0	-0.1	0	11.9	-12.0
8	11.9	11.9	11.9	11.5	11.9	0
9						0
10						5.0
11						0
12						0
13						0

M OF SWITCH BOARD



4 5 6

	IC2	IC4	IC5	IC7	IC8
	-0.5	-0.1	0	1.5	0
	7.5	0	0	1.5	0
	7.6	0	0	1.5	0
	-12.0	-12.0	-12.0	-12.0	0.1
	0	0	0	3.7	5.0
	0	0	0	1.5	0
	0	-0.1	0	11.9	-12.0
	11.9	11.9	11.5	11.9	0
					0
					5.0
					0
					0
					0

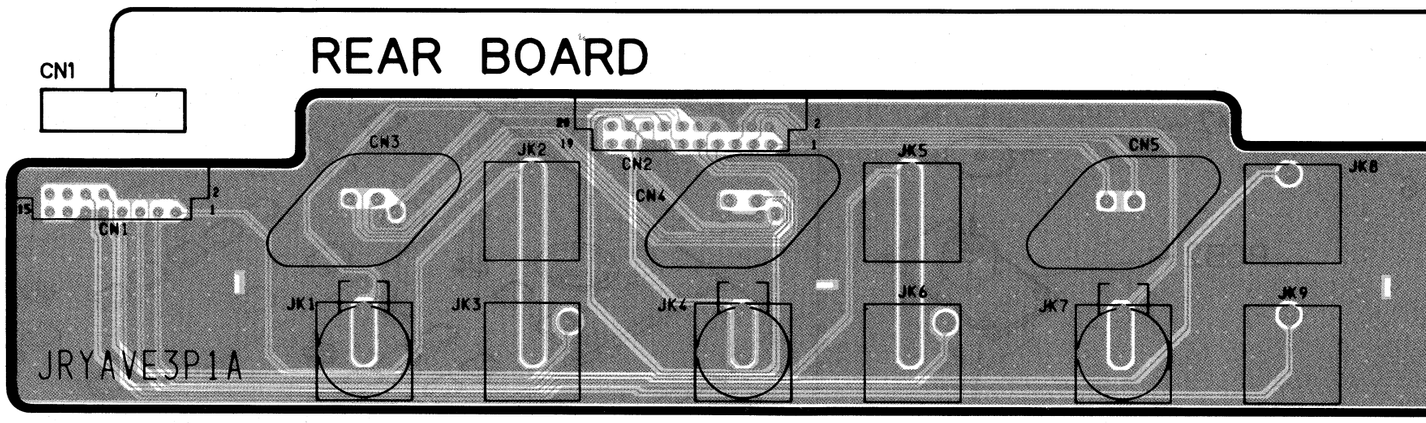
	E	C	B
Q3	0.7	5.1	0.8
4	0	5.1	0.8
5	0	5.1	1.1
6	0.6	5.1	0
7	0.1	0.1	0.1
8	0	0.1	-0.1
9	0	0	-0.5
10	0	0	-0.5
11	0.7	5.1	0.8
12	0	1.5	0.4

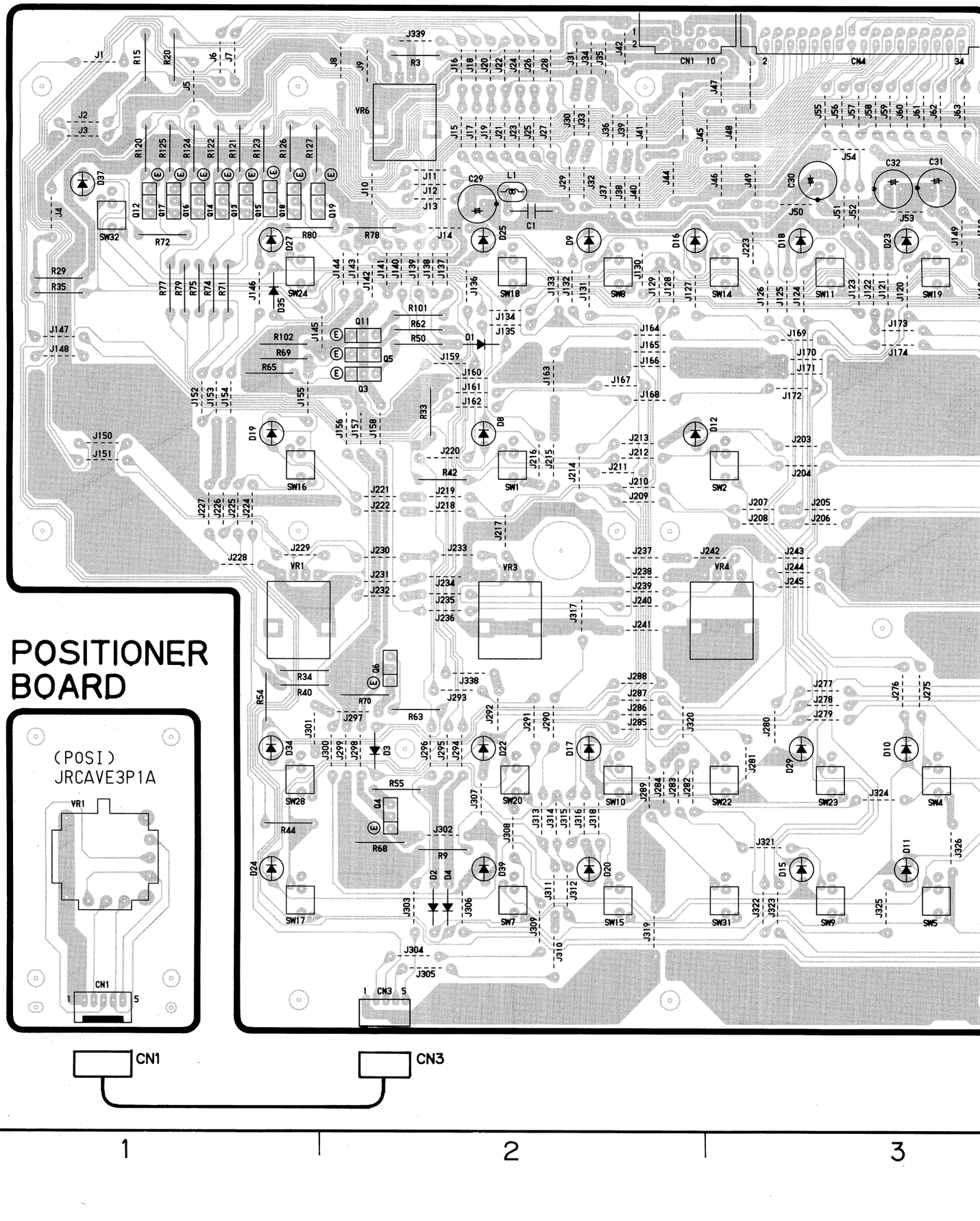
	E	C	B
Q13	0	2.7	0
14	0	2.5	0
15	0	2.1	0
16	0	2.0	0
17	0	0.1	0.1
18	0	2.0	0
19	0	15	0
20	11.7	-0.5	0
21			

CONDUCTOR VIEW OF SWIT

<Address>

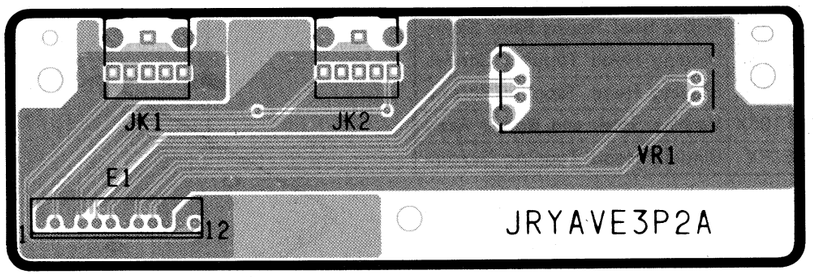
IC1	B5
IC2	A5
IC4	B4
IC5	B5
IC7	C4
IC8	A5
Q3	B2
Q4	A2
Q5	C2
Q6	B2
Q7	C5
Q8	C5
Q9	C4
Q10	C5
Q11	C2
Q12	C1
Q13	C1
Q14	C1
Q15	C1
Q16	C1
Q17	C1
Q18	C1
Q19	C1
Q20	C5
Q21	C4
D1	C2
D2	A2
D3	A2
D4	A2
D5	C4
D7	C4
D8	B2
D9	C2
D10	A3
D11	A3
D12	B2
D13	B4
D14	B4
D15	A3
D16	C2
D17	A2
D18	C3
D19	B1
D20	A2
D21	B5
D22	A2
D23	C3
D24	A1
D25	C2
D26	B4
D27	C1
D28	A4
D29	A3
D30	A4
D32	C5
D33	A4
D34	A1
D35	C1
D36	C4
D37	C1
D38	C4
D39	A2
D40	C4

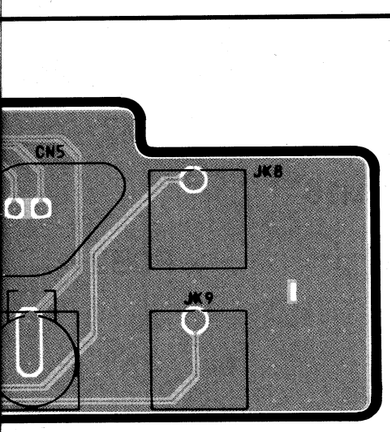




OR VIEW OF SWITCH BOARD

MIC BOARD





E1

CN4
CN6
TO MAIN BOARD

CN2

PATTERN SIDE

COMPONENT SIDE

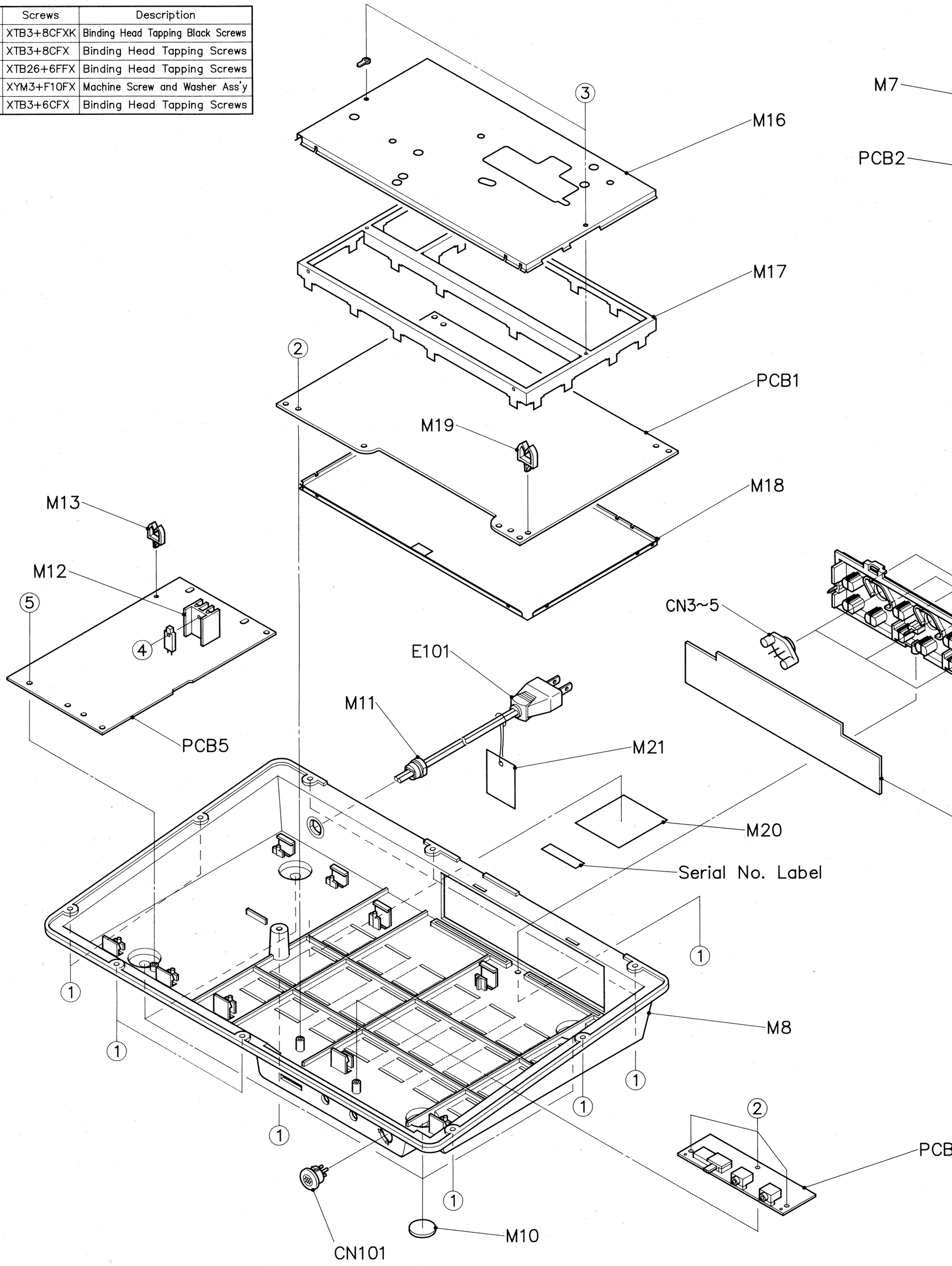
JRBAVE3P1A(SW)

3 4 5

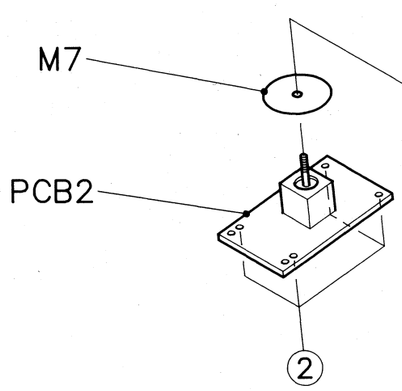
EXPLODED VI

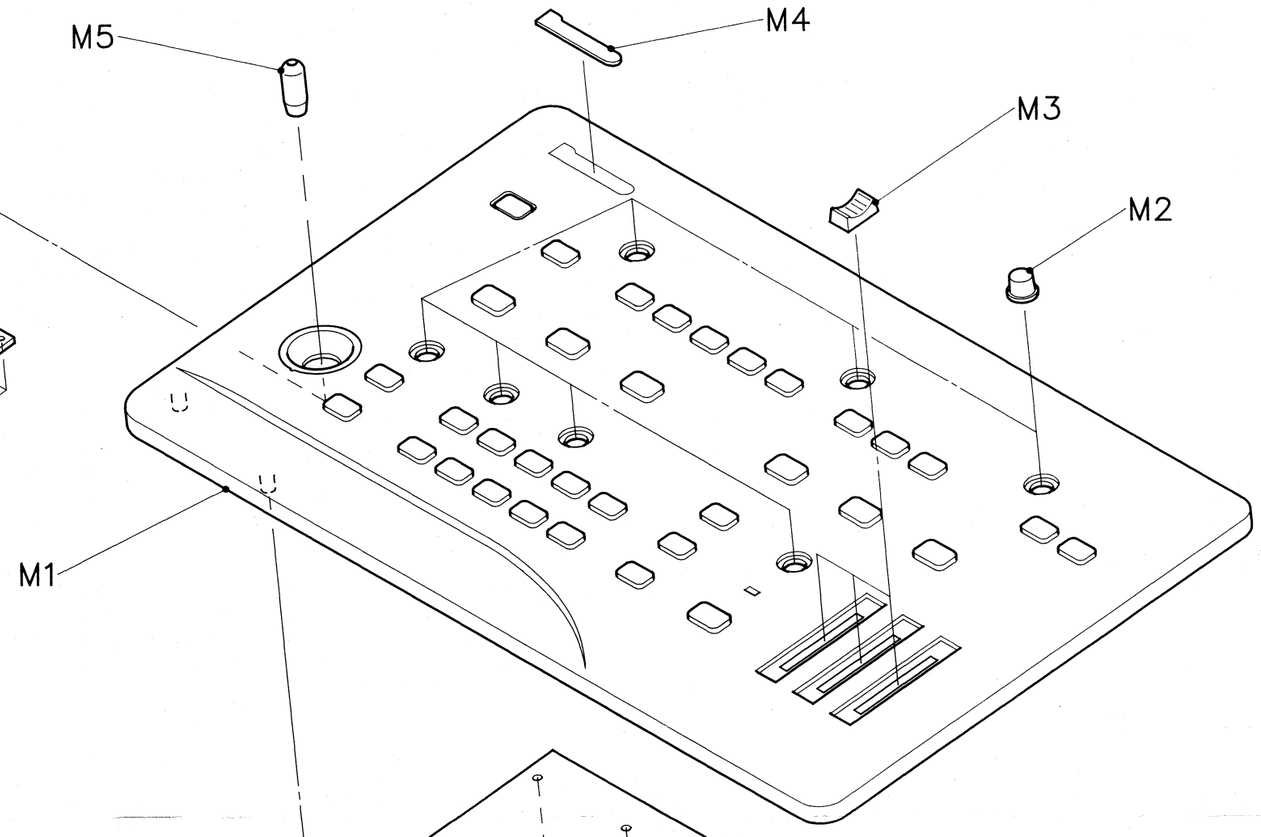
◯ Numbers show screws, washers, nuts, etc.

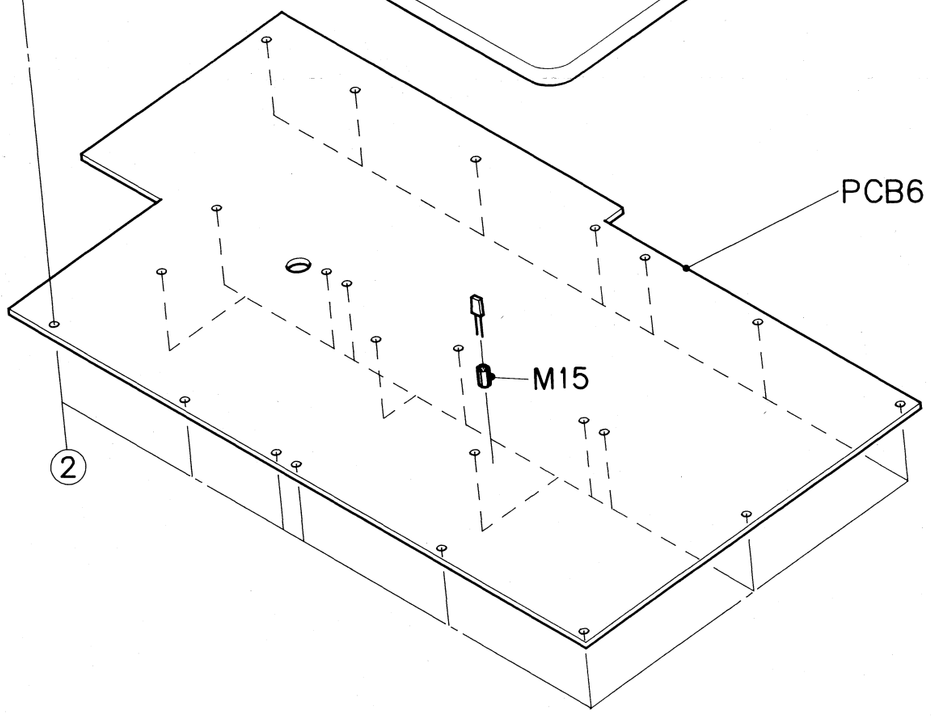
No.	Screws	Description
①	XTB3+8CFXK	Binding Head Tapping Black Screws
②	XTB3+8CFX	Binding Head Tapping Screws
③	XTB26+6FFX	Binding Head Tapping Screws
④	XYM3+F10FX	Machine Screw and Washer Ass'y
⑤	XTB3+6CFX	Binding Head Tapping Screws

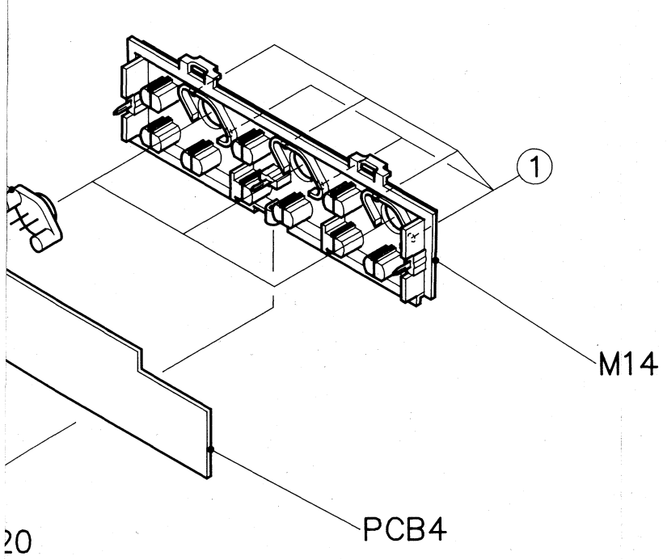


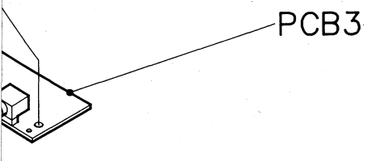
EXPLODED VIEW



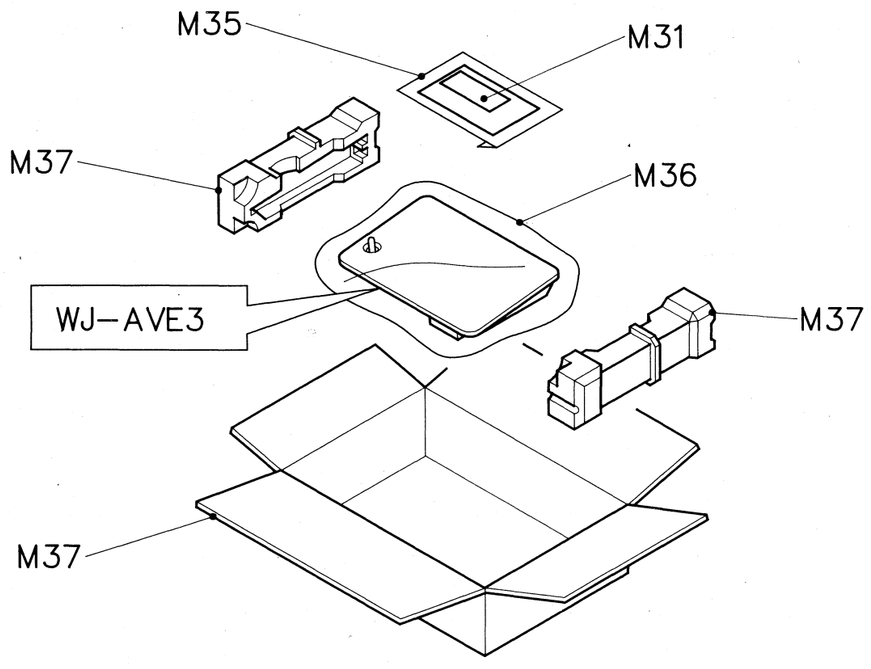








PACKAGING



16

17

CB1

18

20

Label

M8

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
E101 ⚠	YWKP56LT2F22	AC Power Cord for WJ-AVE3/A
	YWGTBS2F	AC Power Cord for WJ-AVE3/B
	YWKP4192F22	AC Power Cord for WJ-AVE3/C,G
CN101	YWD0111N619	ALC Connector
M1	YWV0MA0101AN	Upper Cover Assy
M2	YWV5RA0333B3	Knob (X7)
M3	YWV5RA0335A3	Slied VR Knob (X3)
M4	YWV7PA0093A3	Panasonic Badge
M5	YWV5RA0334A3	Color Correcter Knob
M7	YWV2VA0038A4	Barrier
M8	YWV9AA0711AN	Bottom Cover Assy
M10	YWV5LB0036A4	Rubber Foot
M11	YWSR4K4	Cord Clamp
M13	UAMS-07-V0	Cord Clamp A
M14	YWV9AB0709AN	Rear Panel Assy
M16	YWV2HA0998A2	Shield Parts
M19	YWUAMS09V0	Cord Clamp B
M20 ⚠	YWV7QA2664A4	Main Label for WJ-AVE3/A
	YWV7QA2665A4	Main Label for WJ-AVE3/B
	YWV7QA2666A4	Main Label for WJ-AVE3/C
	YWV7QA2667A4	Main Label for WJ-AVE3/G
M21	YWV7MA0395A4	Safety Label for Power Cord

MAIN BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB1 (NLA)	YWJKZAVE3E2A	Printed Circuit Board Assy
IC1	YWNJM2246M	IC
IC2	YWM51271FP	IC
IC3	-NJM78L05AT3	IC
IC4	YWMC74HC374F	IC
IC5	YWNJM2246M	IC
IC6	YWMC74HC374F	IC
IC7	YWSC7S08F	IC
IC8	AN608P	IC
IC9	YWLM1881M	IC
IC10	NJM319M	IC
IC11	YWSC7S08F	IC
IC12-14	AN608P	IC
IC15	YWNJM3403AM	IC
IC16	NJM2904M	IC
IC17	MC74HC4053F	IC
IC18,19	MN6550BS	IC
IC20	-NJM78L05AT3	IC
IC21	MN188166CUB	IC
IC22	M51951ASL	IC
IC23	MN53007LVW1	IC
IC24	YWSC7S08F	IC
IC25	MN4528BS	IC
IC26	MC74HC4053F	IC
IC27	MN676021PPS	IC
IC28	MN53020LBW	IC
IC29	YWM511000A7Z	IC
IC30	YWUPD42102G3	IC
IC31	-NJM78L09AT3	IC
IC32	MN53040LVX3	IC
IC33-36	YWM5M4C500AL	IC
IC37	MN53080LBR1	IC
IC38	YWSC7SU04F	IC
IC40,41	YWSC7S08F	IC
IC42,43	YWSC7SU04F	IC
Q1-5	2SD601-RS	Transistor
Q6,7	2SB709-QRS	Transistor
Q8	2SD601-RS	Transistor
Q9	2SB709-QRS	Transistor
Q10-13	2SD601-RS	Transistor
Q14,15	2SB709-QRS	Transistor
Q16,17	2SD601-RS	Transistor
Q18,19	2SB709-QRS	Transistor
Q20,21	2SD601-RS	Transistor
Q22	2SB709-QRS	Transistor

REF.NO.	PART NO.	DESCRIPTION
Q23-25	2SD601-RS	Transistor
Q26	2SD1328-RS	Transistor
Q27	2SD601-RS	Transistor
Q28-31	2SD1328-RS	Transistor
Q32	2SD601-RS	Transistor
Q33	2SD1328-RS	Transistor
Q34	XN4501	Transistor
Q35	2SB709-QRS	Transistor
Q36	2SD1328-RS	Transistor
Q37	2SB709-QRS	Transistor
Q38-41	2SK198-Q	FET
Q42	2SB709-QRS	Transistor
Q43	2SD636-QRS	Transistor
Q44	2SB709-QRS	Transistor
Q45	2SD601-RS	Transistor
D1,2	1SS99	Diode
D3	MA151K	Diode
D4-8	1SV153	Diode
D10	1SV153	Diode
D11-13	MA151K	Diode
R1	YF2116202JT	Carbon 2K ohms 1/16W
R2,3	YF2116202JT	Carbon 2K ohms 1/16W
R4	YF2116332JT	Carbon 3.3K ohms 1/16W
R5	YF2116102GT	Carbon 1K ohms 1/16W
R6	YF2116222GT	Carbon 2.2K ohms 1/16W
R7	YF2116202JT	Carbon 2K ohms 1/16W
R8	YF2116392JT	Carbon 3.9K ohms 1/16W
R9	YF2116223JT	Carbon 22K ohms 1/16W
R10	YF2116332JT	Carbon 3.3K ohms 1/16W
R11-16	YF2116102GT	Carbon 1K ohms 1/16W
R17	YF2116433GT	Carbon 43K ohms 1/16W
R18	YF2116122JT	Carbon 1.2K ohms 1/16W
R19	YF2116222GT	Carbon 2.2K ohms 1/16W
R20	YF2116754JT	Carbon 750K ohms 1/16W
R21	YF2116223JT	Carbon 22K ohms 1/16W
R23	L311J103J332	Carbon 3.3K ohms
R24	YF2116103JT	Carbon 10K ohms 1/16W
R25	YF2116474JT	Carbon 470K ohms 1/16W
R26	YF2116512JT	Carbon 5.1K ohms 1/16W
R27	YW2116620JT	Carbon 62 ohms 1/16W
R28	YF2116151JT	Carbon 150 ohms 1/16W
R30,31	YF2116332JT	Carbon 3.3K ohms 1/16W
R32	YF2116102GT	Carbon 1K ohms 1/16W
R33	YF2116103JT	Carbon 10K ohms 1/16W
R34,35	YF2116512JT	Carbon 5.1K ohms 1/16W
R36,37	YF2116222GT	Carbon 2.2K ohms 1/16W
R38	YF2116680JT	Carbon 68 ohms 1/16W
R39-42	YF2116102GT	Carbon 1K ohms 1/16W
R43	YF2116222GT	Carbon 2.2K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R44	YF2116474JT	Carbon 470K ohms 1/16W
R45,46	YF2116102GT	Carbon 1K ohms 1/16W
R48	YF2116511JT	Carbon 510 ohms 1/16W
R49	YF2116101JT	Carbon 100 ohms 1/10W
R50	YF2116102GT	Carbon 1K ohms 1/16W
R51	YF2116433GT	Carbon 43K ohms 1/16W
R52	YF2116562JT	Carbon 5.6K ohms 1/16W
R53	YF2116222GT	Carbon 2.2K ohms 1/16W
R54	YF2116474JT	Carbon 470K ohms 1/16W
R55	YF2116332JT	Carbon 3.3K ohms 1/16W
R56-58	YF2116222GT	Carbon 2.2K ohms 1/16W
R59,60	YF2116680JT	Carbon 68 ohms 1/16W
R61	YF2116511JT	Carbon 510 ohms 1/16W
R62	YF2116392JT	Carbon 3.9K ohms 1/16W
R63	YF2116223JT	Carbon 22K ohms 1/16W
R64,65	YF2116102GT	Carbon 1K ohms 1/16W
R66	YF2116332JT	Carbon 3.3K ohms 1/16W
R67	YF2116222GT	Carbon 2.2K ohms 1/16W
R68	YF2116223JT	Carbon 22K ohms 1/16W
R69	YF2116102GT	Carbon 1K ohms 1/16W
R70	YF2116103JT	Carbon 10K ohms 1/16W
R71	YF2116684JT	Carbon 680K ohms 1/16W
R72,73	YF2116103JT	Carbon 10K ohms 1/16W
R74	YF2116512JT	Carbon 5.1K ohms 1/16W
R75	YF2116102GT	Carbon 1K ohms 1/16W
R76	YF2116123JT	Carbon 12K ohms 1/16W
R77	YF2116243JT	Carbon 24K ohms 1/16WF
R78	YF2116393GT	Carbon 39K ohms 1/16W
R79	YF2116103JT	Carbon 10K ohms 1/16W
R80	YW2116305JT	Carbon 3M ohms 1/16W
R81	YF2116332JT	Carbon 3.3K ohms 1/16W
R82	YF2116103JT	Carbon 10K ohms 1/16W
R83	YF2116222GT	Carbon 2.2K ohms 1/16W
R84	YF2116332JT	Carbon 3.3K ohms 1/16W
R85	YF2116222GT	Carbon 2.2K ohms 1/16W
R86,87	YF2116102GT	Carbon 1K ohms 1/16W
R88	YF2116621JT	Carbon 620 ohms 1/16W
R89	YF2116391JT	Carbon 390 ohms 1/16W
R90	YF2116101JT	Carbon 100 ohms 1/10W
R91	YF2116332JT	Carbon 3.3K ohms 1/16W
R92	YF2116511JT	Carbon 510 ohms 1/16W
R93	YF2116103JT	Carbon 10K ohms 1/16W
R94	YF2116102GT	Carbon 1K ohms 1/16W
R95	YF2116101JT	Carbon 100 ohms 1/10W
R96	YF2116332JT	Carbon 3.3K ohms 1/16W
R97	YF2116511JT	Carbon 510 ohms 1/16W
R98	YF2116103JT	Carbon 10K ohms 1/16W
R99	YF2116102GT	Carbon 1K ohms 1/16W
R100	YF2116101JT	Carbon 100 ohms 1/10W
R101	YF2116332JT	Carbon 3.3K ohms 1/16W
R102	YF2116102GT	Carbon 1K ohms 1/16W
R103	YF2116203JT	Carbon 20K ohms 1/16W
R104-106	YF2116102GT	Carbon 1K ohms 1/16W
R107	YF2116103JT	Carbon 10K ohms 1/16W
R108	YF2116511JT	Carbon 510 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
R109-115	YF2116331JT	Carbon	330 ohms 1/16W	R289	YF2116332JT	Carbon	3.3K ohms 1/16W
R116	YF2116153JT	Carbon	15K ohms 1/16W	R290	YF2116474JT	Carbon	470K ohms 1/16W
R117	YF2116512JT	Carbon	5.1K ohms 1/16W	R291-295	YF2116750JT	Carbon	75 ohms 1/16W
R118,119	YF2116153JT	Carbon	15K ohms 1/16W	R296-298	YF2116104JT	Carbon	100K ohms 1/16W
R121-123	YF2116103JT	Carbon	10K ohms 1/16W	R299	YF2116393GT	Carbon	39K ohms 1/16W
R124-129	YF2116510JT	Carbon	51 ohms 1/16W	R303,304	YF2116271JT	Carbon	270 ohms 1/16W
R130-136	YF2116331JT	Carbon	330 ohms 1/16W	R305	YF2116122JT	Carbon	1.2K ohms 1/16W
R137	YF2116222GT	Carbon	2.2K ohms 1/16W	R306-312	YF2116331JT	Carbon	330 ohms 1/16W
R138	YF2116392JT	Carbon	3.9K ohms 1/16W	R313	YF2116332JT	Carbon	3.3K ohms 1/16W
R139-158	YF2116331JT	Carbon	330 ohms 1/16W	R314-316	YF2116331JT	Carbon	330 ohms 1/16W
R159,160	YF2116104JT	Carbon	100K ohms 1/16W	R317	YF2116102GT	Carbon	1K ohms 1/16W
R161	YF2116102GT	Carbon	1K ohms 1/16W	R318	YF2116332JT	Carbon	3.3K ohms 1/16W
R162	YF2116332JT	Carbon	3.3K ohms 1/16W	R319	YF2116392JT	Carbon	3.9K ohms 1/16W
R163	YF2116103JT	Carbon	10K ohms 1/16W	R320-333	YF2116331JT	Carbon	330 ohms 1/16W
R164	YF2116332JT	Carbon	3.3K ohms 1/16W	R340	YF2116104JT	Carbon	100K ohms 1/16W
R165,166	YF2116202JT	Carbon	2K ohms 1/16W	R341	YF2116222GT	Carbon	2.2K ohms 1/16W
R167	YF2116332JT	Carbon	3.3K ohms 1/16W	R380	YF2116474JT	Carbon	470K ohms 1/16W
R168,170	YF2116102GT	Carbon	1K ohms 1/16W	R381,382	YF2116103JT	Carbon	10K ohms 1/16W
R171	YF2116104JT	Carbon	100K ohms 1/16W	R383	YF2116331JT	Carbon	330 ohms 1/16W
R172	YF2116511JT	Carbon	510 ohms 1/16W	R384	YF2116332JT	Carbon	3.3K ohms 1/16W
R173	YF2116103JT	Carbon	10K ohms 1/16W	R385	YF2116392JT	Carbon	3.9K ohms 1/16W
R174	YF2116332JT	Carbon	3.3K ohms 1/16W	VR1	EVM1DSW30B54	Variable Resistor	50K ohms
R176	YF2116511JT	Carbon	510 ohms 1/16W	VR2	EVM1DSW30B24	Variable Resistor	20K ohms
R177	YF2116331JT	Carbon	330 ohms 1/16W	VR3	EVM1DSW30B13	Variable Resistor	1K ohms
R178	YF2116101JT	Carbon	100 ohms 1/10W	VR4	EVM1DSW30BQ2	Variable Resistor	470 ohms
R179	YF2116331JT	Carbon	330 ohms 1/16W	VR5,6	EVM1DSW30B34	Variable Resistor	30K ohms
R180	YW2116105JT	Carbon	1M ohms 1/16W	VR7	EVM1DSW30B24	Variable Resistor	20K ohms
R181	YF2116102GT	Carbon	1K ohms 1/16W	VR8,9	EVM1DSW30B13	Variable Resistor	1K ohms
R182,183	YF2116104JT	Carbon	100K ohms 1/16W	VR10	EVM1DSW30B14	Variable Resistor	10K ohms
R184-186	YF2116511JT	Carbon	510 ohms 1/16W	VR11 ☆	EVM1DSW30BQ2	Variable Resistor	470 ohms
R187	YF2116752JT	Carbon	7.5K ohms 1/16W	VR12	EVM1DSW30B14	Variable Resistor	10K ohms
R188	YF2116511JT	Carbon	510 ohms 1/16W	Z1	YWRKM10L102F	Block Resistor	
R189	YF2116333GT	Carbon	33K ohms 1/16W	Z2	YWRKM10L503F	Block Resistor	
R190	YF2116332JT	Carbon	3.3K ohms 1/16W	Z3	YWRKM10L102F	Block Resistor	
R192	YF2116102GT	Carbon	1K ohms 1/16W	C1	YF400222XKT	Ceramic	2200 pF
R194	YF2116104JT	Carbon	100K ohms 1/16W	C2	ECEA0JKA221	Electrolytic	220 µF 6.3V
R195-198	YF2116511JT	Carbon	510 ohms 1/16W	C3,4	ECEA1AKA470	Electrolytic	47 µF 10V
R199	YF2116102GT	Carbon	1K ohms 1/16W	C5	ECEA1AKA220	Electrolytic	22 µF 10V
R200	YF2116103JT	Carbon	10K ohms 1/16W	C6	YWT316B473MT	Ceramic	0.047 µF
R201,202	YF2116511JT	Carbon	510 ohms 1/16W	C7	ECEA0GKA101	Electrolytic	100 µF 4V
R203	YF2116104JT	Carbon	100K ohms 1/16W	C8	ECEA1AKN100	Electrolytic	10 µF 10V
R204	YF2116332JT	Carbon	3.3K ohms 1/16W	C9	YWT316B104MT	Ceramic	0.1 µF
R205	YF2116101JT	Carbon	100 ohms 1/10W	C10	ECEA0JKS101	Electrolytic	100 µF 6.3V
R206	YF2116511JT	Carbon	510 ohms 1/16W	C11	YF400102XKT	Ceramic	1000 pF
R207	YF2116332JT	Carbon	3.3K ohms 1/16W	C12	ECEA1HKA010	Electrolytic	1 µF 50V
R208	YF2116333GT	Carbon	33K ohms 1/16W	C13	ECEA1HKAR47	Electrolytic	0.47 µF 50V
R209	YF2116511JT	Carbon	510 ohms 1/16W	C14	ECEA1HKA010	Electrolytic	1 µF 50V
R210	YF2116752JT	Carbon	7.5K ohms 1/16W	C15	YF400201CHJT	Ceramic	200 pF
R211	YF2116103JT	Carbon	10K ohms 1/16W	C16,17	YWT316B473MT	Ceramic	0.047 µF
R212	YF2116102GT	Carbon	1K ohms 1/16W	C18	YF400102XKT	Ceramic	1000 pF
R213	YW2116105JT	Carbon	1M ohms 1/16W	C19,20	YWT316B104MT	Ceramic	0.1 µF
R214-285	YF2116331JT	Carbon	330 ohms 1/16W	C21	YF400102XKT	Ceramic	1000 pF
R286	YF2116511JT	Carbon	510 ohms 1/16W	C22	YWT316B104MT	Ceramic	0.1 µF
R287	YF2116392JT	Carbon	3.9K ohms 1/16W	C23	ECEA1HKA010	Electrolytic	1 µF 50V
R288	YF2116222GT	Carbon	2.2K ohms 1/16W	C24	YWT316B104MT	Ceramic	0.1 µF

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
C25	ECEA0JKA470	Electrolytic	47 µF 6.3V	C90	YF400151SLKT	Ceramic	150 pF
C26	YWT316B104MT	Ceramic	0.1 µF	C91	ECEA1AKA220	Electrolytic	22 µF 10V
C27	ECEA1HKA010	Electrolytic	1 µF 50V	C92	YWT316B104MT	Ceramic	0.1 µF
C28	YWT316B104MT	Ceramic	0.1 µF	C93	ECEA1AKA470	Electrolytic	47 µF 10V
C29	YW400050CHJT	Ceramic	5 pF	C94	YF400330CHJT	Ceramic	33 pF
C30	YF400561CHJT	Ceramic	560 pF	C95	YWT316B104MT	Ceramic	0.1 µF
C32	ECEA1CKA470	Electrolytic	47 µF 16V	C96	YWS21A106T	Electrolytic	10 µF 10V
C33	YWT316B104MT	Ceramic	0.1 µF	C97	ECEA1HSN2R2	Electrolytic	2.2 µF 50V
C34	ECEA1CKA470	Electrolytic	47 µF 16V	C98	YWT316B104MT	Ceramic	0.1 µF
C35	YWT316B104MT	Ceramic	0.1 µF	C99	YF400330CHJT	Ceramic	33 pF
C36	YWS21A106T	Electrolytic	10 µF 10V	C100	ECEA1AKA470	Electrolytic	47 µF 10V
C37	ECEA1AKA220	Electrolytic	22 µF 10V	C101	YWT316B104MT	Ceramic	0.1 µF
C38	YF400222XKT	Ceramic	2200 pF	C102	YWS21A106T	Electrolytic	10 µF 10V
C39	ECEA0GKA470	Electrolytic	47 µF 4V	C103,104	YWT316B104MT	Ceramic	0.1 µF
C40	YF400222XKT	Ceramic	2200 pF	C105	ECST1AD336ZR	Tantalum	33 µF 10V
C41	YWT316B104MT	Ceramic	0.1 µF	C106	YWT316B104MT	Ceramic	0.1 µF
C42	YWS21A106T	Electrolytic	10 µF 10V	C107	YF400102XKT	Ceramic	1000 pF
C43	YF400430CHJT	Ceramic	43 pF	C108-113	YWT316B104MT	Ceramic	0.1 µF
C45	ECEA1CKA470	Electrolytic	47 µF 16V	C114	YF400102XKT	Ceramic	1000 pF
C46	ECEA1AKA220	Electrolytic	22 µF 10V	C115	ECEA1AKA470	Electrolytic	47 µF 10V
C47	ECEA1CKN4R7	Electrolytic	4.7 µF 16V	C116	ECEA0JKA470	Electrolytic	47 µF 6.3V
C48-50	ECEA0GKA470	Electrolytic	47 µF 4V	C117	YWT316B104MT	Ceramic	0.1 µF
C51	YWT316B104MT	Ceramic	0.1 µF	C118	YWS21A106T	Electrolytic	10 µF
C52	ECEA1AKA220	Electrolytic	22 µF 10V	C119,120	YWT316B104MT	Ceramic	0.1 µF
C53,54	ECEA0JU471	Electrolytic	470 µF 6.3V	C121	ECST1AD336ZR	Tantalum	33 µF 10V
C55	YF400390CHJT	Ceramic	39 pF	C122,123	YWS21A476T	Electrolytic	47 µF
C56	ECEA1AKA220	Electrolytic	22 µF 10V	C124,125	ECEA1CKA470	Electrolytic	47 µF 16V
C57	ECEA1AKA470	Electrolytic	47 µF 10V	C126,127	YWT316B104MT	Ceramic	0.1 µF
C58	YWT316B473MT	Ceramic	0.047 µF	C128	ECEA1AKA220	Electrolytic	22 µF 10V
C59	ECEA1AKA470	Electrolytic	47 µF 10V	C129	ECEA1CU102	Electrolytic	1000 µF 16V
C60,61	YF400220CHJT	Ceramic	22 pF	C130	YWS21A106T	Electrolytic	10 µF 10V
C62,63	YWT316B104MT	Ceramic	0.1 F	C131	YWT316B104MT	Ceramic	0.1 µF
C64	ECEA0JKA470	Electrolytic	47 µF 6.3V	C132	YWS21A106T	Electrolytic	10 µF 10V
C65	YWT316B104MT	Ceramic	0.1 µF	C133	ECST1AD336ZR	Tantalum	33 µF 10V
C66	ECEA1AKA470	Electrolytic	47 µF 10V	C134-143	YWT316B104MT	Ceramic	0.1 µF
C67	YWT316B104MT	Ceramic	0.1 µF	C144	YF400151SLKT	Ceramic	150 pF
C68	ECEA1AKA220	Electrolytic	22 µF 10V	C145-159	YF400330CHJT	Ceramic	33 pF
C69-71	YWT316B104MT	Ceramic	0.1 µF	C160,161	YF400820CHJT	Ceramic	82 pF
C72	ECEA0JKA470	Electrolytic	47 µF 6.3V	C162	YF400101SLKT	Ceramic	100 pF
C73	YWT316B104MT	Ceramic	0.1 µF	C163	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C74	ECEA1AKA220	Electrolytic	22 µF 10V	C164	YF400103XMT	Ceramic	0.01 µF
C75	ECEA1CKA470	Electrolytic	47 µF 16V	C165	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C76	ECEA1HKA2R2	Electrolytic	2.2 µF 50V	C166	YWT316B104MT	Ceramic	0.1 µF
C77	ECEA1AKA470	Electrolytic	47 µF 10V	C167,168	ECEA1AKA220	Electrolytic	22 µF 10V
C78	YWT316B104MT	Ceramic	0.1 µF	C169	YWT316B104MT	Ceramic	0.1 µF
C79	YF400220CHJT	Ceramic	22 pF	C170	YF400330CHJT	Ceramic	33 pF
C80	ECEA1AKA220	Electrolytic	22 µF 10V	C171,172	YWS21A106T	Electrolytic	10 µF 10V
C81	ECEA1CKA470	Electrolytic	47 µF 16V	C173	YF400100CHDT	Ceramic	10 pF
C82	ECEA1HKA2R2	Electrolytic	2.2 µF 50V	C174	YWS21A106T	Electrolytic	10 µF 10V
C83	ECEA1AKA470	Electrolytic	47 µF 10V	C175	YF400201CHJT	Ceramic	200 pF
C84	YWT316B104MT	Ceramic	0.1 µF	C177	YF400330CHJT	Ceramic	33 pF
C85,86	YF400220CHJT	Ceramic	22 pF	C178,179	YF400470CHJT	Ceramic	47 pF
C87	ECEA1AKA220	Electrolytic	22 µF 10V	C180	YF400201CHJT	Ceramic	200 pF
C88	YF400330CHJT	Ceramic	33 pF	C181,182	YF400330CHJT	Ceramic	33 pF
C89	YWS21A476T	Electrolytic	47 µF 10V	C183	ECEA1HKA2R2	Electrolytic	2.2 µF 50V

REF.NO.	PART NO.	DESCRIPTION
C184	YF400332XKT	Ceramic 3300 pF
C185	YF400330CHJT	Ceramic 33 pF
C186	YF400180CHJT	Ceramic 18 pF
C188-190	YWS21A106T	Electrolytic 10 µF 10V
C191,192	YF400330CHJT	Ceramic 33 pF
C193,194	YWT316B104MT	Ceramic 0.1 µF
C195	YWS21A106T	Electrolytic 10 µF 10V
C196-198	YF400330CHJT	Ceramic 33 pF
C199	YF400390CHJT	Ceramic 39 pF
C200	YWT316B104MT	Ceramic 0.1 µF
C201	ECEA1CKA470	Electrolytic 47 µF 16V
C202	YF400101SLKT	Ceramic 100 pF
C203	ECEA1CKA470	Electrolytic 47 µF 16V
C204	YF400330CHJT	Ceramic 33 pF
C205	YF400332XKT	Ceramic 3300 pF
C206	ECEA1HKA2R2	Electrolytic 2.2 µF 50V
C207	YF400101SLKT	Ceramic 100 pF
C208,209	YF400330CHJT	Ceramic 33 pF
C210	YWT316B104MT	Ceramic 0.1 µF
C211	YF400330CHJT	Ceramic 33 pF
C212	YF400220CHJT	Ceramic 22 pF
C213	YWT316B104MT	Ceramic 0.1 µF
C214	YWS21A106T	Electrolytic 10 µF 10V
C215	YWT316B104MT	Ceramic 0.1 µF
C216	YWS21A106T	Electrolytic 10 µF 10V
C217	YWT316B104MT	Ceramic 0.1 µF
C218	ECEA0JU102	Electrolytic 1000 µF 6.3V
C219	ECEA1AKA220	Electrolytic 22 µF 10V
C220	YWS21A106T	Electrolytic 10 µF 10V
C221	YWT316B104MT	Ceramic 0.1 µF
C222	YWS21A106T	Electrolytic 10 µF 10V
C223	YWT316B104MT	Ceramic 0.1 µF
C224	ECST1AD336ZR	Electrolytic 33 µF 10V
C225	ECEA0GKA470	Electrolytic 47 µF 4V
C226	YWS21A476T	Electrolytic 47 µF 10V
C229	YF400222XKT	Ceramic 2200 pF
C230	YWT316B104MT	Ceramic 0.1 µF
C231	YF400680CHJT	Ceramic 68 pF 10V
C232	YF400330CHJT	Ceramic 33 pF
C233	YWT316B104MT	Ceramic 0.1 µF
C234	YWS21A106T	Electrolytic 10 µF
C235	ECEA1CKA470	Electrolytic 47 µF 16V
C236	YWT316B104MT	Ceramic 0.1 µF
C237	ECEA1AKA220	Electrolytic 22 µF 10V
C238	ECEA0JU102	Electrolytic 1000 µF 6.3V
C239	YWT316B104MT	Ceramic 0.1 µF
C240-262	YF400330CHJT	Ceramic 33 pF
C265	YF400102XKT	Ceramic 1000 pF
C266	YF400101SLKT	Ceramic 100 pF
C267	YWS21A476T	Electrolytic 47 µF 10V
C268	YF400200CHJT	Ceramic 20 pF
C269,270	YF400201CHJT	Ceramic 200 pF
CT1	YFTZ03R200FR	Trimmer Capacitor 20 pF
L1-6	ELESE220KA	Coil 22 µH
L7-9	ELC08D082	Coil 56 µH

REF.NO.	PART NO.	DESCRIPTION
L10	ELESE220KA	Coil 22 µH
L11	YWF3216C220K	Coil 22 µH
L12,13	ELESN2R2MA	Coil 2.2 µH
L14	ELESE8R2KA	Coil 8.2 µH
L15	YWELESN1R0MA	Coil 1 µH
L16	YWS5LE0381	Coil
L17-19	YWELESN1R0MA	Coil 1 µH
L20	YWS5LE0381	Coil
L21-23	YWELESN1R0MA	Coil 1 µH
L24	ELC08D082	Coil 56 µH
L27	ELESE150KA	Coil 15 µH
L28	ELESE8R2KA	Coil 8.2 µH
L29	ELC08D082	Coil 56 µH
L30	YWF3216C220K	Coil 22 µH
L32	EFDVN645A41E	Delay Line
L33,34	YFBL02RN2R62	Coil
T1	YW29188EG	High Freq Transforme
X1,2	YFMS30917M10	Crystal Oscillator
X3	YWN8R4R40625	Crystal Oscillator
X4	EF0GC8004A4	Oscillator
CF1	YWYS30383	Filter
CF2	YWYS30389	Filter
CF3	YWYS30484	Filter
CF4	YWYS30386A	Filter
CF5	YWY5G0382	Filter
CF6,7	YWYS30384	Filter
CF8,9	YWYS30387	Filter
CN1	YWF794P034LA	34-pin Connector
CN2	YWF794P020LA	20-pin Connector
CN3	YW530140710	7-pin Connector
CN4	YW530141210	12-pin Connector
CN5	YW530141110	11-pin Connector
CN6	YWF794P014LA	14-pin Connector
CN7	YWF794P010LA	10-pin Connector
TP1-26	YWRCS3216TPV	Test Point
M17	YWV2HA0999A1	Shield Cover A
M18	YWV2HA1000A2	Shield Cover B

POSITIONER BOARD

PCB2 (NLA)	YWJKCAVE3P1A	Printed Circuit Board Assy
VR1	YWVL201104L	Variable Resistor
CN1	YW530150510	5-pin Connector

REF.NO.	PART NO.	DESCRIPTION
MIC BOARD		
PCB3 (NLA)	YWJKYAVE3P2A	Printed ircuit Board Assy
VR1	YWS152KGD10	Variable Resistor
JK1	YWHSJ0912020	Jack
JK2	YWHSJ0912040	Jack
CN1	YW530141210	12-pin Connector
REAR BOARD		
PCB4 (NLA)	YWJKYAVE3P1A	Printed Circuit Board Assy
CN1	YWF795P016LA	16-pin Connector
CN2	YWF795P020LA	20-pin Connector
CN3-5	YWM1824	4-pin Connector
POWER BOARD		
PCB5 (NLA)	YWJKZAVE3E1A	Printed Circuit Board Assy
IC1	YWNJM78M12FA	IC
IC2	YWNJM79L12A	IC
IC3	YWTA76431S	IC
Q1	2SC3866	Transistor
Q2	2SD973-QRS	Transistor
Q3,4	2SD1199-ST	Transistor
Q6	2SB1050	Transistor
Q7	2SB641-QR	Transistor
Q8	2SB1050	Transistor
Q9,10	2SD636-QRS	Transistor
Q11	2SD973-QRS	Transistor
D1 ⚠	S1WBA60	Diode
D2	YWERA34-10	Diode
D3	EM01Z	Diode
D5	YFERA22-02	Diode
D6	YWPC111	Diode
D7	YWERA84009	Diode
D8	ERC81-004	Diode
D9	YWERA84009	Diode
D10	MA165	Diode
VS1 ⚠	ERZC07DK471U	ZNR
R1	ERC12ZGM156	Solid Resistor 15M ohms 1/2W
R2-4	ERD50FJ224	Carbon 220K ohms 1/2W
R5	ERDS2TJ331	Carbon 330 ohms 1/4W
R6	ERG1SJ391	Metal 390 ohms 1W
R7	ERDS2TJ101	Carbon 100 ohms 1/4W
R8	ERDS2TJ102	Carbon 1K ohms 1/4W
R9	ERDS1VJ101	Carbon 100 ohms 1/2W
R10	ERDS2TJ272	Carbon 2.7K ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION
R11	ERX1SJ2R7P	Metal 2.7 ohms 1W
R12	ERDS2TJ102	Carbon 1K ohms 1/4W
R13	ERDS2TJ333	Carbon 33K ohms 1/4W
R14	ERDS2TJ334	Carbon 330K ohms 1/4W
R15	ERDS2TJ561	Carbon 560 ohms 1/4W
R16	ERDS2TJ102	Carbon 1K ohms 1/4W
R17	ERDS2TJ103	Carbon 10K ohms 1/4W
R18	ERDS2TJ271	Carbon 270 ohms 1/4W
R19	ERDS2TJ333	Carbon 33K ohms 1/4W
R20	ERDS2TJ103	Carbon 10K ohms 1/4W
R21	ERDS2TJ203	Carbon 20K ohms 1/4W
R22	ERDS2TJ470	Carbon 47 ohms 1/4W
R23,24	ER0S2CKF6801	Metal 6.8K ohms 1/4W
R25	ERF5TJ220	Wire Wound 22 ohms 5W
R26	ERC12ZGK105	Solid 1M ohms 1/2W
VR1	YFH0621A2R2K	Variable Resistor 2.2K ohms
C1,2	ECQU2A563MT	Plastic 0.056 µF 250V
C3-7	ECKDRS332ME	Ceramic 3300 pF 250V
C8	EC0S2GA560BA	Electrolytic 56 µF 140V
C9	ECQE10472KV	Plastic 4700 pF 1KV
C10	ECKD3A101KBN	Ceramic 100 pF 1KV
C11	ECQB1H152JZ	Plastic 1500 pF 50V
C12	ECQB1H822JZ	Plastic 8200 pF
C13	ECQB1H332JZ	Plastic 3300 pF
C15,16	ECEA1HFS010	Electrolytic 1 µF 50V
C17	ECEA1HFS4R7	Electrolytic 4.7 µF 50V
C19	ECA1EFQ221	Electrolytic 220 µF 25V
C20,21	ECA1EFQ181	Electrolytic 180 µF 25V
C22-24	ECA1AFQ102	Electrolytic 1000 µF 10V
C25,26	ECA1AFQ331	Electrolytic 330 µF 10V
C27	ECA1EFQ221	Electrolytic 220 µF 25V
C28	ECA1EFQ181	Electrolytic 180 µF 25V
C29	ECQB1H103JZ	Plastic 0.01 µF 50V
C30	ECKDRS152ME	Ceramic 1500 pF 250V
L1 ⚠	ELF18D290H	Coil 29 µH
L2,3	YWTSL07150K	Coil 15 µH
T1 ⚠	ETS27K730A	Power Transformer
F1 ⚠	XBA2C16ET0A	Current Fuse 1.6A 250V
SF2	YWSSFR1AF002	Current Fuse 0.1A
SF3	SSFR1.6A002	Current Fuse 1.6A
SF4	SSFR315F002	Current Fuse 3.15A
E1,2	YFCD20ACCAP	Insulator Cover for Test-pin
E5	YW851040	Insulator Cover for Ceramic (C30)
E6	YW851248	Insulator Cover for Ceramic (C7)
E11,12	S-N5057	Fuse Holder
TP1	YWTM028B	Test-pin
CN1	YW530141110	11-pin Connector
M12	YWDBA25BSAN0	Heat Sink

SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB6 (NLA)	YWJKBAVE3P1A	Printed Circuit Board Assy	
IC1,2	YWNJM2068DD	IC	
IC4	YWNJM2068DD	IC	
IC5	YWM5216P	IC	
IC7	NJM2043D	IC	
IC8	YWM5206P	IC	
Q3-19	2SD1992A	Transistor	
Q20,21	2SB1320A	Transistor	
D1-5	MA165	Diode	
D7-30	YWSLH34DT90T	Diode	
D32	YWSLH34DT90T	Diode	
D33	LN210RP	LED	
D34	YWSLH34DT90T	Diode	
D35	MA165	Diode	
D36	YWSLH34DT90T	Diode	
D37	-SLR34VR90T	Diode	
D38	MA165	Diode	
D39	YWSLH34DT90T	Diode	
D40	MA165	Diode	
R3,9	ERDS2TJ272	Carbon	2.7K ohms 1/4W
R15,20	ERDS2TJ101	Carbon	100 ohms 1/4W
R26,27	ER0S2CKF1002	Metal	10K ohms 1/4W
R29,31	ERDS2TJ103	Carbon	10K ohms 1/4W
R33,34	ERDS2TJ103	Carbon	10K ohms 1/4W
R35	ERDS2TJ102	Carbon	1K ohms 1/4W
R36	ERDS2TJ103	Carbon	10K ohms 1/4W
R37	ERDS2TJ102	Carbon	1K ohms 1/4W
R38,40	ERDS2TJ103	Carbon	10K ohms 1/4W
R42-44	ERDS2TJ102	Carbon	1K ohms 1/4W
R45	ERDS2TJ104	Carbon	100K ohms 1/4W
R47,49	ERDS2TJ103	Carbon	10K ohms 1/4W
R50	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R51	ERDS2TJ102	Carbon	1K ohms 1/4W
R52	ERDS2TJ103	Carbon	10K ohms 1/4W
R54	ERDS2TJ102	Carbon	1K ohms 1/4W
R55	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R56	ER0S2CKF10R0	Metal	10 ohms 1/4W
R60	ERDS2TJ102	Carbon	1K ohms 1/4W
R61	ERDS2TJ103	Carbon	10K ohms 1/4W
R62,63	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R64	ERDS2TJ103	Carbon	10K ohms 1/4W
R65	ERDS2TJ104	Carbon	100K ohms 1/4W
R66	ERDS2TJ103	Carbon	10K ohms 1/4W
R67	ER0S2CKF10R0	Metal	10 ohms 1/4W
R68-70	ERDS2TJ104	Carbon	100K ohms 1/4W
R71,72	ERDS2TJ101	Carbon	100 ohms 1/4W
R73	ERDS2TJ104	Carbon	100K ohms 1/4W
R74,75	ERDS2TJ101	Carbon	100 ohms 1/4W
R76	ERDS2TJ104	Carbon	100K ohms 1/4W
R77-80	ERDS2TJ101	Carbon	100 ohms 1/4W
R81	ER0S2CKF4702	Metal	47K ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION	
R82	ER0S2CKF3301	Metal	3.3K ohms 1/4W
R83,84	ER0S2CKF2202	Metal	22K ohms 1/4W
R85	ER0S2CKF2203	Metal	220K ohms 1/4W
R86	ER0S2CKF1002	Metal	10K ohms 1/4W
R87	ER0S2CKF3302	Metal	33K ohms 1/4W
R88,89	ER0S2CKF2202	Metal	22K ohms 1/4W
R90,92	ER0S2CKF2702	Metal	27K ohms 1/4W
R93	ER0S2CKF3302	Metal	33K ohms 1/4W
R94,96	ER0S2CKF7502	Metal	75K ohms 1/4W
R97,99	ER0S2CKF6200	Metal	620 ohms 1/4W
R101	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R102	ERDS2TJ104	Carbon	100K ohms 1/4W
R105	ERDS2TJ101	Carbon	100 ohms 1/4W
R106	ERDS2TJ223	Carbon	22K ohms 1/4W
R107	ERDS2TJ562	Carbon	5.6K ohms 1/4W
R108	ERDS2TJ332	Carbon	3.3K ohms 1/4W
R109	ERDS2TJ104	Carbon	100K ohms 1/4W
R110	ER0S2CKF5602	Metal	56K ohms 1/4W
R111	ER0S2CKF3302	Metal	33K ohms 1/4W
R112,113	ER0S2CKF1000	Metal	100 ohms 1/4W
R114,115	ERDS2TJ163	Carbon	16K ohms 1/4W
R116,117	ER0S2CKF2202	Metal	22K ohms 1/4W
R120-127	ERDS2TJ103	Carbon	10K ohms 1/4W
R130	ERDS2TJ104	Carbon	100K ohms 1/4W
VR1-7	EVJ02AF20B15	Variable Resistor	100K ohms
VR9,10	EWAPA1X05C54	Variable Resistor	50K ohms
VR11	EWAPFEX05C54	Variable Resistor	50K ohms
C1	YWUP05F104ZA	Ceramic	0.1 µF
C4	YWUP05B101KN	Ceramic	100 pF
C5	YWUP05B820KN	Ceramic	82 pF
C6	YWUP05S270JN	Ceramic	27 pF
C7	YWUP05B101KN	Ceramic	100 pF
C8	YWUP05F104ZA	Ceramic	0.1 µF
C9,10	YWUP05B101KN	Ceramic	100 pF
C11,12	YWUP05F104ZA	Ceramic	0.1 µF
C13,14	YWUP05B101KN	Ceramic	100 pF
C15	YWUP05F104ZA	Ceramic	0.1 µF
C16	YWUP05B101KN	Ceramic	100 pF
C17	YWUP05S470JN	Ceramic	47 pF
C18	YWUP05C180JN	Ceramic	18 pF
C19	YWUP05F104ZA	Ceramic	0.1 µF
C20	YWUP05C180JN	Ceramic	18 pF
C21	YWUP05B101KN	Ceramic	100 pF
C22	YWUP05F104ZA	Ceramic	0.1 µF
C23	YWUP05B101KN	Ceramic	100 pF
C24	YWUP05S470JN	Ceramic	47 pF
C25	YWUP05B101KN	Ceramic	100 pF
C26	YWUP05F104ZA	Ceramic	0.1 µF
C27,28	YWUP05B471KN	Ceramic	470 pF
C29-32	ECEA1CKS101	Electrolytic	100 µF 16V
C33	ECEA1AKN220	Electrolytic	22 µF 10V
C37	ECEA1CKS101	Electrolytic	100 µF 16V
C42	ECEA1VKA330	Electrolytic	33 µF 35V
C47,48	ECEA1HKN010	Electrolytic	1 µF 50V
C49	ECEA1EKN4R7	Electrolytic	4.7 µF 25V

REF.NO.	PART NO.	DESCRIPTION
C50	ECEA1HKN010	Electrolytic 1 µF 50V
C52	ECEA1EKN4R7	Electrolytic 4.7 µF 25V
C54-57	ECEA1HKN010	Electrolytic 1 µF 50V
C58	EP05X682MA	Ceramic 6800 pF
C59	EP05X332MA	Ceramic 3300 pF
C60	ECEA1EKN100	Electrolytic 10 µF 25V
C64-66	ECEA1AKN220	Electrolytic 22 µF 10V
C67	ECEA1CKS101	Electrolytic 100 µF 16V
C68	YWUP05F104ZA	Ceramic 0.1 µF
C69,70	ECEA1EKN100	Electrolytic 10 µF 25V
C71,72	ECEA1AKN220	Electrolytic 22 µF 10V
C81-84	ECEA1CKS101	Electrolytic 100 µF 16V
C85	YWUP05F104ZA	Ceramic 0.1 µF
C86	ECEA1EKN100	Electrolytic 10 µF 25V
L1	ELESE220KA	Coil 22 µH
SW1-5	EVQQTU05R	Push Switch
SW7-11	EVQQTU05R	Push Switch
SW14-37	EVQQTU05R	Push Switch
CN1	YWF795P010LA	10-pin Connector
CN2	YWF795P030LA	30-pin Connector
CN4	YWF795P034LA	Connector
CN3	YW530150510	Connector
M15	YWA2NA0257A4	Spacer

REF.NO.	PART NO.	DESCRIPTION
ACCESSORY PARTS/PACKAGING PARTS		
M31	YWV8QA2580AN	Operating Instructions
M35	XZB26X40C05	Polyethylene Bag
M36	XZB55X71C1	Polyethylene Bag
M37	YWV9CA1697AN	Packaging Assyfor WJ-AVE3/A
	YWV9CB1697AN	Packaging Assyfor WJ-AVE3/B
	YWV9CC1697AN	Packaging Assyfor WJ-AVE3/C
	YWV9CD1697AN	Packaging Assyfor WJ-AVE3/G

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